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PRIMARY HEADACHES - AN OVERVIEW

Headache is one of the common presenting symptom encountered in our day to day clinical. In the United States, 85% of the population present with complaint of headache on one occasion or the other during their lifetime[1]. The prevalence of migraine is believed to be higher in Western than in the Asian countries. In the West, the prevalence of migraine in adults varies from 0.5% to 12%[2]. As in other parts of the world, in Kashmir too, headache constitutes one of the commonest presenting symptom in our routine daily clinical practice. Tension headache and migraine are the commonest forms of headache disorders. Various occupations and socio-demographic factors have been found to have an adverse effect on the frequency and severity of various headache disorders. Apart from traditional precipitating factors, militancy related stress and handicrafts profession are the main predisposing factors for tension and cervicogenic headaches respectively in Kashmir valley. Moreover, Ramadhan fasting is one of the prime precipitating factor for migraine in the valley. As other parts of the world, migraine and tension type headache disorders have a tendency to occur with increased frequency in females and males respectively. Increased frequency of tension headaches in Kashmir valley has been attributed to increased stress in masses because of prevailing militancy related turbulent conditions in the during last one decade. Unemployment too, has been found to act as a major stressor among youth with tension headache.[3]

Other primary headache-type i.e. migraine, as expected, is more prevalent among females. Aura symptoms preceding an episode of migraine are observed in about one-fourth of total migraineurs[4]. The aura symptoms may occur days to hours before onset of actual headache. Premonitory symptoms may help patients in predicting arrival of their headaches. In a minority of migraineurs, aura symptoms may be more disabling than the actual headache. These aura symptoms, in order of frequency, are visual, somatosensoy or auditory in nature. Apart from conventional aura symptoms, Balint's syndrome, oscillocusis and nonspecific transient psychological changes have been reported to constitute migraine aura[5,6]. These symptoms usualy last for less than 30 minutes. The aura symptoms may or may not be followed by a headache. Auditory aura symptoms are quite rare and usually overlooked by the treating physician. Cheiro-oral migraine, an unusual presentation of vascular headache also may be overlooked in clinical practice unless meticulously kept in mind[7].

Symptoms and signs accompanying an epidode of migraine include nausea, vomiting, photophobia, phonophobia, osmophobia and syncope. Oculo-sympathetic paresis (Horner's syndrome), lacrimation, conjunctival congestion, nasal stuffiness/rhinorrhoea, sweating, hemifacial flushing-periorbital and transient localized palatal swellings are observed in cluster headache[8]. Evanescent or irreversible neurological deficit is a feature of complicated migraine.

Stres, menstruation, sleep deprivation and Ramadhan fasting are the main precipitating factors for various vascular headaches.

Headaches which are rcurrent, persistent, atypical and show unsatisfactory response to various conventional treatment modalities need to be evaluated by making use of various neuroimaging techniques like cranial computerized tomographic scan, magnetic resonance imaging and magnetic resonance angiography. Further investigations are decided according to clinical presentation and therapeutic response of the patient so as to arrive at a definite dagnosis.

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NITRIC OXIDE AND KIDNEY

Vijay Gupta M.D.; D.M.; D.N.B (Nephrology)

Nitric Oxide (NO) is a lipophilic, highly reactive, free radical gas with diverse biomessenger functions. Evidence reveals involvement of NO in a remarkable array of key physiological processes, including regultion of vascular tone, platelet aggregation, host-defense, inflammation, neurotransmission, learning and memory, penile erection, gastric emptying, hormone release, cell differentiation, cell migration and apoptosis. These biological actions of NO result from covalent modification of numerous enzymes, receptors, structural proteins and transcription factors. Whether the net effects of NO on a given cell are beneficial or deleterious is determined by the NO concentration obtained, duration of production and composition of the surrounding microenvironment.

No is derived from the amino acid L-arginine in the presence of the enzyme nitric oxide synthase (NOS). Three different types of NOS have been identified: neuronal NOS (nNOS or NOS 1), inducible NOS (iNOS or NOS 2) and endothelial NOS (eNos or NOS 3). All three types of NOS are present in the kidney, and both eNOS and iNOS are directly involved in the regulation of glomerular filtration rate (GFR) and renal plasma flow (RPF) under normal physiological conditions.

Discovery of the diverse and important biological actions now ascribed to NO began a scant decade ago. Nonetheless it has been known since the later 1970s that NO is a potent activator of soluble guannylate cyclase and cyclic guanosine monophosphate (cGMP) dependent relaxation of isolated proconstricted blood vessels. In any event, a first clue to the origin of endogenous nitrate/nitrite came from the finding that urinary excretion was markedly increased in rats challenged with bacterial endotoxin. Since the late 1980s and early 1990s, NO has been shown to be an ubiquitous product involved in the regulation of multiple processes throughout the body. The kidney does not escape from the influence of NO, and it is now clearly established that NO plays a critical role in multiple renal processes, including regulation of RPF, GFR, renin and angiotensin-II generation, sodium excretion and renal injury.

This article reviews the role of NO in the control of RPF and GFR and its interactions with the renin angiotensin system and renal nerves. An analysis of the effects of NO on sodium reabsorption, with special emphasis on the role of NO in modulating proximal tubular reabsorption, is also discussed.

Renal Plasma Flow (RPF) & Glomerular Filtration Rate (GFR):

Evaluation of the role of NO in the regulation of RPF and GFR has heavily relied on the use of various NOS inhibitors with different degrees of specificity with respect to each one of NOS isoforms. Examples of these nonspecific NOS inhibitors include NG-monomethyl-L-arginine (L-NNA). NOS blockers have been very helpful because of our limitations in providing accurate measurements of NO production linked to specific physiological responses, and delivering NO donors in physiological concentrations to specific target cells.

Renal Hemodynamic Effects:

NOS blockade induces in the anestheised rat changes in glomerular hemodynamics (increase in glomerular capillary hydrostatic pressure and transcapillary hydrostatic pressure gradient, and reduction in nephron plasma flow and glomerular ultrafiltrtion coefficient) similar to the ones observed with increases in angiotensin II (Fig.1):

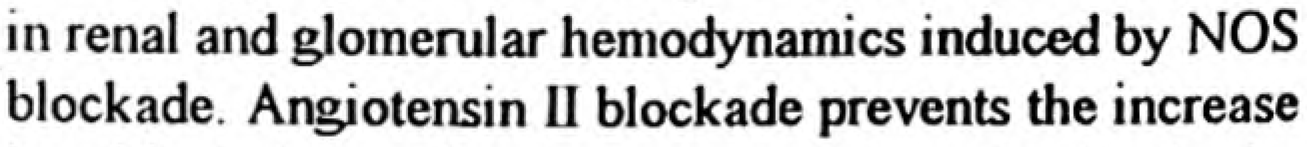
Nos Blockade
↑ Preglomerular resistance
↓ Glomerular ultrafiltration coefficient
↑ Efferent arteriorlar resistance

Fig. 1: Effect of administration of nonspecific NOS inhibitors on renal hemodynamics. NOS blockade increases preglomerular resistance and decreases the glomerular ultrafiltration coefficent. The increase in efferent arteriorlar resistance is not a universal finding and varies depending on the experimental preparations.

Angiotensin II receptor blockers (ATI blockers) or converting enzyme inhibitors prevent most of the changes in renal and glomerular hemodynamics induced by NOS blockade. Angiotensin II blockade prevents the increase in critical glomerular pressures and the reduction in the ultrafiltration coefficient during NOS blockade, but does not modify the increase in preglomerular arteriolar

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resistance. Persistence of hypertension in spite of angiotensin II blockers during NOS blockade may explain the increase in afferent arteriolar tone through a myogenic mechanism. Therefore, these results suggest that NOS blockade unveils the presence of a tonic effect of angiotensin II on the renal microcirculation, which is normally opposed by NO production.

In vitro studies clearly support the presence of an important interaction between angiotensin II and NO in the regulation of renal vascular tone. Studies using afferent arteriorlar vessel preparations show that NOS blockade is associated with increased response to angiotensin II as indexed by larger and prolonged reduction of arteriolar lumen in vitro. The response seems to predominate in the afferent arteriole because changes in efferent arteriolar tone induced by angiotensin II are not modified by NOS blockers (Fig. 2).

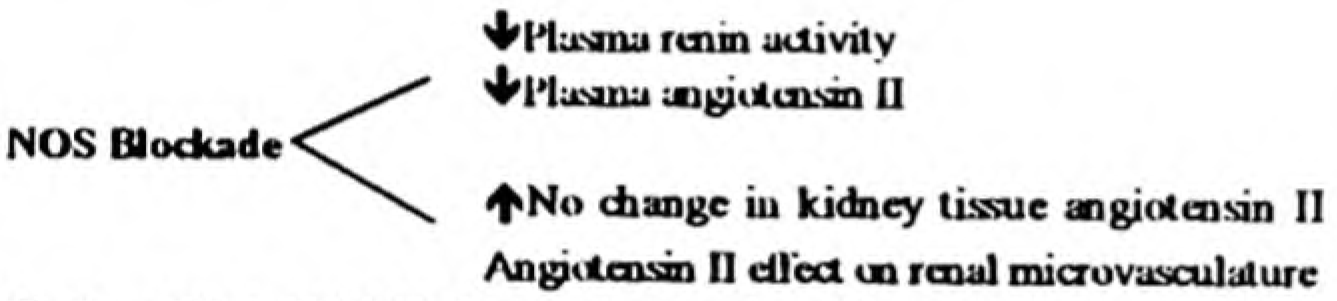
↓Plasma renin activity
↓Plasma angiotensin II
NOS Blockade
↑No change in kidney tissue angiotensin II
Angiotensin II effect on renal microvasculature

Fig. 2: Effect of NOS blockers on plasma renin activity, plasma angiotensin II, and kidney tissue angiotensin II levels.

Renin-Angiotensin and NO:

The interaction between angiotensin II and NO is more complex than just NO's opposition to the tonic effect of angiotensin II on the renal microcirculation. This complexity is generated by the effects of NO on production of renin and angiotensin, and by the effects of angiotensin II on NO production. However, it is important to mention that NOS blockade leads to significant changes in plasma angiotensin II in the absence of changes in kidney tissue angiotensin II content. Under normal physiological conditions, plasma angiotensin II concentrations and kidney tissue angiotensin II levels move in similar directions. Administration of a low-salt diet increases plasma and kidney tissue angiotensin II Levles. In contrast, administration of converting enzyme inhibitors reduces both plasma and kidney tissue angiotensin II levels. Studies by Garcia et al. evaluated the effect of NOS blockade on plasma and kidney angiotensin II levels. These studies utilized anesthetized rats undergoing acute (3-hr) or chronic (2-week) administration of NOS blockers. Acute infusion of the NOS blocker L-NMMA increased systemic blood pressure, but did not modify GFR. Measurements of angiotensin II revealed a significant reduction in plasma angiotensin II levels in the absence of changes in kidney tissue angiotensin II. Placement of an aortic snare to prevent increases in renal perfusion pressure during NOS blockade revealed similar changes in plasma and kidney tissue antiotensin II, implying that inhibition of renin and plasma angiotensin II generation is independent of the changes in systemic blood pressure, and that NOS blockers directly suppress renin secretion. Chronic administration of the NOS blocker-L-NAME was associated with systemic hypertension and reduction in plasma angiotensin II levels in the absence of changes in kidney tissue antiotensin II. These results clearly show an effect of NO on renin and plasma angiotensin II generation and provide a mechanism to understand the response to AT1 blockers in the setting of NOS blockade. Poor acute antihypertensive effect correlates well with the reduction in plasma angiotensin II levels, and suppression of the angiotensin II effects on the renal microvasculature correlate well with normal kidney tissue angiotensin II levels. However, these results do not explain the mechanism responsible for the dissociation between plasma and kidney tissue levels of angitensin II.

Another approach used to evaluate the role of the NO-angiotensin II interaction has been to analyze the response of the renal vasculature to exogenous angiotensin II infusion in baseline conditions and after NOS blockade. Studies performed in awake animals (rat and dog) have shown that NOS blockade significantly increases the renal vasoconstriction induced by angiotensin II infusion. Studies performed under anesthetized conditions have shown heightened responses of afferent and efferent resistances to angiotensin II under NOS blockade. Analysis of cortical and medullary blood flow during NOS blockade have shown a predominant efect of angiotensin II on cortical blood flow, medullary blood flow being highly dependent on NO but less sensitive to variations in angiotensin II. The results of these studies somehow imply that, similar to the interaction between angiotensin II and vasodilatory prostaglandins, angiotensin II increases NO generation, which modulates the vasoconstrictive effect of angiotensin II. Recent studies provide support for this hypothesis. Studies by Thorup et al., using isolated renal resistance arteries, show that progressively higher concentrations of angiotensin II lead to increased NO production (measured with a microelectrode) in the absence of changes in flow or perfusion pressure. These changes in NO concentration are blocked by angiotensin II receptor blockers (losartan and candesartan). Hennington et al. have provided further support for this hypothesis in their studies measuring endothelial NOS messenger RNA (mRNA) and eNOS protein after acute and chronic administration of angiotensin II. Acute angiotensin II infusion (110 minutes) increased eNOS mRNA by 70% without changing eNOS protein levels, whereas chronic infusion of angiotensin II (10 days) increased eNOS protein by 90% without changing eNOS mRNA levels.

The mechanism by which angiotensin II stimulates NO production remains poorly defined. Recent and exciting evidence suggest that the angiotensin II receptor AT2 may be involved in this response. Although most of the systemic, renal vascular and tubular efects of angiotensin II are mediated through the angiotensin II AT1 receptor, several studies have confirmed the presence of AT21 receptor in the kidney. Utilizing a microdialysis technique, Siragy and Carey have monitored renal interstitial fluid cyclic guanine monophosphate (cGMP) concentrations (as a surrogate of NO activity) in conscious rats exposed to low-salt and normal-salt diets. Increased angiotensin II concentration in salt-depleted rats was associated with increased cGMP in the interstitial fluid, which could be blocked by the AT2 receptor antagonist PD 123319, providing exciting new information regarding the role of AT2 receptors.

Role of NO in Renin Secretion:

Another important aspect of the interaction between NO and angiotensin II is the role of NO in renin secretion. As one of the constitutive NOS, is localized in the macula densa, a part of the juxtaglomerular apparatus. To investigate the role of NO in renin secretion, studies have analyzed the changes in renin and renin mRNA and NOS and NOS mRNA during physiological and pathophysiological stimuli, such as acute changes in renal perfusion pressure, administration of loop diuretics, dietary salt manipulation (low-salt v. high-salt diet), and renal artery stenosis and its effect on the contralateral kidney, these have demonstrated that changes in NOS and gene expression parallel changes in renin and renin gene expression. Studies directed at defining the type of NOS involved in renin changes have pointed to the neuronal NOS with no consistent correlation with endothelial and inducible NOS. Interestingly, the effects of NO from endothelial NOS may be quite different from the NO derived from nNOS because neuronal NOS stimulates renin whereas endothelial-derived NO may inhibit renin.

The role of NO in renin generation and secretion has attracted the interest of various investigators. NO plays a role not only in stimulation of renin gene, but also in renin secretion. Schricker et al. have shown that renin mRNA is under tonic control of NO, an effect that is counteracted by angiotensin II, whereas Chatiziantoniou et al. have found that L-NAME disrupts the correlation between renin release and tissue renin content in isolated afferent arterioles in vitro.

More recent studies by the Kutz group have focussed on the role of NO in renin secretion. NO donors (sodium nitroprusside) increase renin secretion through a cyclic adenosine monophosphate (cAMP) mediated pathway whereas NO mediated cGNP generation increases cAMP activity by inhibiting cGMP phosphodiesterase 3.

Studies in Humans:

Administration of the NOS inhibitor L-NMMA to normal human volunteers is associated with a significant reduction in sodium and water excretion. This effect is susceptible to changes in sodium intake because a high-salt diet enhanced this response whereas a low-salt diet suppressed the effects of L-NMMA on fractional excretion of soidum.

Effect of Chronic NOS Blockade on Kidney Function:

Several studies have evaluated the effects of chronic administration of nonspecific NOS blockers on systemic blood pressure, renal function and renal morphology. These studies show that NOS blockers lead to progressive increases in systemic blood pressure that remains persistently elevated as long as the NOS blockers are administered. Paralleling the increase in systemic blood pressure, renal hemodynamics show significant reductions of RPF and GFR. The reduction in GFR is usually mild after short-term NOS blockade, but becomes more substantial with time. Micropuncture experiments performed after 2 months of L-NAME administration revealed the presence of an elevated glomerular transcapillary hydrostatic gradient and significant reductions in the glomerular ultrafiltration coefficient.

The presence of severe hypertension is also associated with the development of proteinuria and significant morphological changes. Histological examination of rats treated with long-term NOS blockers shows the presence of focal segmental glomerulosclerosis and significant vascular damage. Treatment of hypertension associated with long-term NOS blockasde has provided important information regarding the possible mechanism(s) responsible for the increase in system blood pressure. Angiotensin converting enzyme inhibitors and AT1 receptor blockers have been quite successful in reducing systemic blood pressure and preventing renal damage in this setting. These results contrast with the findings in acute NOS blockade in which AT1 receptor blockers do not lower systemic blood pressure. It is likely that, as renal vascular damage progresses because of severe hypertension, ischemic lesions stimulate renin secretion, making hypertension more angiotensin II-dependent, a phenomenon that is worsened by increased salt intake.

Studies utilizing endothelin receptor antagonist have shown very limited response, making endothelin an

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unlikely candidate in this type of hypertension.

In conclusion, NO plays a major role in the control of renal hemodynamics and sodium excretion by hypertensive understanding.

The primary role of the kidney is to maintain the volume and electrolyte composition of the body fluids and to regulate blood pressure. These ends are achieved through the actions of several regulatory systems that may either impinge on the kidney from the outside or be self contained within the kidney. Tubuloglomerular feedback (TGF) is an intra-renal regulatory system that operates at the single nephron level to stabilize nephron function. TGF occurs within the juxtaglomerular apparatus (JGA), which is comprised of the macula densa extraglomerular mesangium, and vascular pole of the glomerulus. The macula densa is a specialized group of tubular epithelial cells located in the area of the nephron between the thick ascending limb of the loop of Henle and the distal tabule. The abluminal surface of the macula densa lies opposed to the extraglomerular messangium which forms syncitium residing between the macula densa and vascular pole of the parent glomerulus. The amount of salt that passes down the nephron to reach the macula densa is sensitive to variations in both single nephron glomerular filtration rate (SNGFT) and tubular reabsorption. Any change in the amount of salt reaching the macula densa sets into motion a series of physiological processes within the JGA that leads to an off-setting adjustment in SNGFT. This series of processes is defined as TGF. Sgnals to macula densa which stimulates the vasocontrictor events that defines TGF also cause increased generation and release of NO. The simultaneous release of this potent vasodilator has the effect of suppressing the full expression of TGF.

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VITILIGO SURGERY - CURRENT CONCEPTS

Iffat Hassan M.D.; Parvaiz A. Shah M.D., D.M.

Vitiligo is an acquired depigmenting skin condition that results from the destruction of the melanocyte. Vitiligo affects 1-2% the world population and approximately 3% of Indians are affected by this disease.[1,2]

The term vitiligo was first used by the Roman physician Celsius in his Latin medical classic 'De Medicina.' This dates back to around 30 AD. There is however, disagreement regarding the deviation of the term. El Mofty suggests that vitiligo is derived from the Latin word 'Vitelius' which means 'calf'; referring to the characteristic white patches of the disease resembling the white patches of a spotted calf.[3,4]

In spite of its antiquity, the precise etiology of the disease remains far from clear. Although strict proof is lacking, complex genetic, autoimmune, self-desructive and neural mechanisms have been implicated in its etiopathogenesis. A breakdown in the antioxidant defence mechanisms of the skin leading to melanocytotoxicity has also been implicated.[5,6]

Vitiligo essentially is a benign cosmetic problem. The conscpicuous depigmenting lesion appear strikingly bizarre and can be very disturbing psychologically especially in dark skinned people. A typical vitiligo lesion presents as a well defined depigmented (milky white) macule without any change in texture and with or without depigmented (white) hair. In some cases the lesion may be surrounded by a hypopigmented zone which in turn is separated from normal skin by a hyperpigmented rim (Trichrome vitiligo). Sometimes, there is perifollicular hyperpigmentation peculiar of repigmenting vitiligo (Quadrichrome vitiligo). This patchy loss of pigmentation can appear anywhere on the skin surface, at any age, regardless of sex and racial background. Episodic phases of quiescence and rapid extension of disease over years are frequent. Probable factors for these events could be friction, itching, trauma, pregnancy, parturition, surgery, gastrointestinal disturbances, psychological trauma and idiopathic in 50% of cases.

There has been a continuous effort to get the best medical modality for the management of vitiligo which would give maximum therapeutic benefit. The various medical therapeutic options available today are able to give 60-90% results either singly or in combination.

They can be broadly divided into:-

a. Local management.
b. Systemic management.

a. Local management includes:-

1. Topical PUVA
2. Steroids
3. 5-Fluorouracil
4. Placental extract
5. Minoxidil
6. Melagenina
7. Coal tar
8. Pseudocatalase and calcium with UVB
9. Others.

b. Systemic management includes:-

1. Psoralens
2. Corticosteroids
3. Khellin
4. Phenylalanine
5. Placental extract
6. Nutritional agents
7. Immunomodulators
8. Miscellaneous

Complete repigmentation is always the desired expectation of every patient though more often than not it achieves only partial results. Slow inconstant repigmentation deteriorates patient's compliance. These patients in whom repigmenttion is biologically not possible, best therapy may be surgical intervention. Sometimes when lesions occur on the unexposed, cosmetically unimportant areas, patients are ready to accept them and hence, cn be left alone. However frequently such hidden lesions also necessitate treatment, along with those occurring on the exposed sites. In such a situation, the dermatologist can advise camouflaging creams (Covermark, Dermablend) for daily use but it may not be acceptable to all, due to their time consuming application, not perfect colour match, temporary action, side effects like contact dermatitis and their cost and

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difficulty in procurement. It is in such situations, that the dermatosurgeon can resort to surgical methods with the confidence of providing permanent correction of these cosmetically unacceptable depigmented lesions. The various surgical procedures are designed with either of the following four aims in mind.

1. Introduce artificial pigments into the affected skin for permanent camouflage e.g. tattooing.
2. Remove the depigmented areas forever e.g. excision with primary closure.
3. Repopulate the depleted melanocytes by various grafts e.g. Thiersch's grafts, suction blister and miniature punch grafts, epidermal and melanocyte cultures.
4. Stimulate the melanocytes from the periphery and the black hair follicles to profliferate and migrate into the lesion, inducing repigmentation e.g. therapeutic dermabrasion, needling, TCA application.

Patient Selection Criteria

1. Patient should have realistic expectations Avoid psychologically unstable patients.
2. Patients not responding to adequate trial of medical line of treatment.
3. Stable Vitiligo - vitiligo lessions should be strictly stable for minimum of two years i.e. existing lesions should not be expanding and no new lesion should have developed in this interim.
4. Minigrafting test is negative for activity - The stability of the disease process should always be confirmed by doing trial grafting in a small vitiliginous test patch, 1½-2 months before planning the entire vitiligo surgery.

The surgical modalities for vitiligo include:

I. Surgical Excision[7]

Here the stable vitiligo patch is excised followed by suturing. It can be performed when the patch is small in size espeically on the scalp, waist, penile skin, labia and side of face.

II. Tattooing or micropigmentation

Tattooing or Micropigmentation is one of the surgical methods used to treat stable vitiligo by permanent camouflage. Tattooing is defined as uniform implantation of minute inert pigment granules into the dermis, so as to artistically create a permanent cosmetic camouflage using manual or electrically driven needles. The camouflaging colour matches the surrounding skin or mucous membrane. The sites referred for tattooing are lips, eyebrows, hands, fingers, feet and toes. In fact any part of the body (including elbows, knees, breasts and penis) can be treated by micropigmentation, when the patient is psychologically in need of a dramatic response. The initial result is impressive but subsequent fading and colour mismatch are the main drawbacks.[8]

III. Miniature Punch Grafting

This procedure carried out under local anaesthesia, consists of taking punch autografts of sizes 1.5, 2 or 2.5 mm from normal pigmented skin and grafting them in appropriately punched out chambers spaced 5 to 10mm apart at the recipient site.

The success of miniature punch grafting depends on three basic principles:-

a. Vitiligo should be stable .
b. Donor dominance principle.: This states that, when a graft of normal skin is transplanted to an affected site, the transposed grafted skin maintains its integrity and characteristics independently of the recipient site. Thus when normal pigmented donor autopunch graft is harvested on to an achromic recipient stable vitiligo area, it dominates and the melanocytes in the transgrafted minigrafts not only continue to produce melanin but also migrate into the adjacent achromic epidermis seen clinically as perigrafted pigmentation. These pigmented islands later coalesce to repigment the vitiligo area in next 3-6 months.[9-11]
c. Sound operative technique and good post-operative wound care will ensure the success of this procedure.

The limitations of this procedure are cobblestoning, sinking pits, polka dot appearance, depigmentary functional line and superficial scarring at donor site.

IV. Spot and regional Dermabrasion

Dermabrasion is an extensively used surgical modality for the treatment of many cutaneous problems from acne scars to tattooes to tumours. Therapeutic spot or regional dermabrasion (TSD) is dermabrasion restricted only to the specific lesion. It has been successfully used for the treatment of vitiligo alone and in combination with occlusion of the abraded wounds with 5-fluorouracil cream.

Following dermabrasion, reepithelization takes place from the remnants of dermal appendages i.e. sebaceous glands, hair follicles and sweat glands. The follicular and perilesional melanocytes are stimulated inducing perifollicular and perilesional pigmentation [12]

V. Thin Thiersch's split thickness skin grafting

Split thickness skin grafting involves the free transfer of epidermis and a portion of dermis from one site to another. Thiersch was the first to use larger sheets of split thickness skin grafts in 1886, for treating patients with cutaneous defects[13]. Behl in 1964 first reported the use of thin Thiersch's skin grafts to treat stable vitiligo.[14,15]

This procedure consists of obtaining a very thin split thickness skin graft, consisting of the epidermis and part of the upper papillary dermis, grafting it on to the dermabraded patch of stable vitiligo, and securing it with pressure and local immobilization. The technique is simple to learn and master, and gives rapid results. It is useful when large areas of vitiligo have to be treated.

VI. Epidermal grafting by suction blistering

Autologous epidermal grafting with suction blister technique is a novel therapeutic modality for the treatment of stable vitiliginous patch which is resistant to medical line of treatment.[16]

It is defined as a type of autologou epidermal grafting in which graft is obtained by applying negative pressure to the skin surface with the help of a suction device, causing separation at the dermo-epidermal junction, which is then grafted on the denuded recipient area. Other methods of grafting where split thickness grafts are used have disadvantage of causing cosmetic damage to the donor site, since part of dermis is removed while obtaining a graft but with suction blister technique the donor site heals without scarring as the separation is at the dermoepidermal junction and dermis is not harmed.

VII. Needling and spot chemical peeling

These minor surgical procedures can be used to treat those vitiligo cases who have responded well to medical treatment, but still retain a few narrow streaks or small patches of depigmented areas with hyperpigmented borders. Such lesions are too tiny to be treated with spot dermabrasion or grafting, and tattooing may not give a good cosmetic result.

VIII. In Vitro cell cultures transplants

Involves culturing both keratinocytes and melanocytes or melanocytes alone in special culture media, followed by grafting on to vitiligo lesions. Variations in the culture media has been made like addition of natural melanocyte growth factors such as basic fibroblast growth factor to obtain melanocyte suspension with high concentration of cells.[17]

IX. Non Cultured melanocyte suspension

Recently a technique has been described by Olsson and Juhlin of using a melanocyte enriched basal cell layer suspension obtained from a superficial shave biopsy sample of pigmented skin. The cells were separated and the melanocytes were concentrated and suspended in a medium which was applied to dermabraded vitiliginous areas with a size eight to ten times larger than the donor area.[18]

X. Single hair transplant (SHT)[19]

SHT is a novel approach to repigment vitiligo patches. However, it was first applied to treat androgenetic alopecia, and reconstruction of eyebrows and eyelashes.

The aim of vitiligo surgery should be to achieve uniform pigmentation throughout the lesion, with the colour and surface textue matching the surrounding skin. The chosen procedure should also be cost effective. Melanocyte culture and grafting, although available has a prohibitive cost. The method selected for a patient will mainly depend upon the expertise of the dermatologist and the requirement of the patient.

Quick Results Desired

If quick results are required, tattooing or thin Thiersch's split skin graft is the best. Other procedures like suction blister grafting or miniature punch grafting take 3-6 months for optimum results.

Location of the lesion.

a. **Angle of the mouth, nipple, areola, genitalia:** Tattooing.

b. **Tip of fingers and toes, palms, areola, scrotum:** Miniature punch grafting with some adaptations in technique.

c. **Lips:** Suction blister grafting. In dark individuals if only a part of a lip is affected, tattooing gives equally good results. Miniature punch grafting and split skin grafting with sutures can also be done.

d. **Hairy areas (i.e. scalp, beard, moustache, eyebrows):** Miniature punch grafting or thin Thiersch's split skin grafts after double shaving and pressure.

e. **Scars:** Thin Thiersch's split skin grafting or miniature punch grafting.

f. **Eyelids:** Thin Thiersch's split skin grafting, miniature punch grafting or suction blister grafting.

g. **Other areas:** All methods will work.

Conclusions:

Dermatosurgery is very rewarding in cases of stable vitiligo. Proper selection of the techniques plays a major role in achieving good cosmetic results. Each technique has its own advantages and disadvantages. Although some may be simple to perform, others may have more potential side effects.

Future advancement in cell culture techniques with simplification and automation of presently available methods will help in solving some of the present day difficulties.

Cloning which has been applied in hair transplantation with a success may emerge as a procedure option for treating vitiligo in this new millinnium.

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TABLET TREATMENT OF TYPE II DIABETES MELLITUS (AN OVERVIEW OF OLD AND NEW GENERATION DRUGS)

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Type II diabetes mellitus (formerly known as NIDDM) is a worldwide health problem and constitutes more than 90 percent of all cases of diabetes in the developing countries. Among the various therapeutic modalities, oral hypoglycaemic agents are considered an important treatment in the step-wise approach to managing the type II diabetic. Several such agents like sulphonylureas and biguanides have been in use since world war II yet only in recent years the availability of new oral antidiabetic drugs provided us with more options should certain therapies fail. The present article discusses the clinical use and the place of oral drugs, in particular the new generation antihyperglycaemic agents as these are quickly supplanting the old fashioned drugs.

A. Old generation drugs:

This group includes two classes of drugs, namely sulphonylureas and the biguanides. Glimepiride, a recent sulphonylurea, will be discussed later as a new generation agent.

Sulphonylureas:

The discovery and development of sulphonylureas, the first orally active hypoglycaemic agents, resulted from clinical observations made in France during world war II. The first successful sulphonylurea, tolbutamide, was marketed in fifties and was quickly followed by the other so-called " first generation" agents Acetohexamide, tolazamide, and chlorpropamide. These differed primarily in their potencies and pharmcokinetic properties. Subsequently, the "second generation" agents namely glibenclamide, glyburide, glipizide, gliquidone, and gliclazide, were developed. Sulphonylureas remain the most widely prescribed oral hypoglycaemic drugs and they have been used in many countries for more than 40 years and have been characterized in a large number of patients. The primary mechanism of action of sulphonylureas is to stimulate insulin secretion. They specifically bind to a receptor and close ATP-sensitive potassium channels on pancreatic beta cell membrane, and the resulting depolarization promotes influx of calcium, a signal for insulin release. As a group these agents are associated with a reduction in fasting blood glucose level of approximately 60 mg/dl and in HbA1c of 1.5 to 2 %. In general all sulphonylureas bind to circulating albumin and may be displaced by other drugs, such as sulphonamides, NSAID'S, beta blockers and others, that compete for their binding sites.

Sulphonylureas are good first-line choice for treating hyperglycaemia in the non-obese type II patients and are not drugs of first-choice in obese patients because they encourage weight gain. Published clinical information also exists for their use in combination with metformin especially in overweight type II patients. Generally speaking duration of action, route of elimination, and frequency of hypoglycemia should provide the guidelines for the selection of the sulphonylurea in the individual patient. However, otherwise it also depends on the age of the patient and renal function, and/or more generally just on personal experience. There is no fixed dosage required for the management of diabetes mellitus with these agents and they are not effective in all patients, however, and primary and secondary failures (after months or years of use) do occur. The patient's fasting blood glucose and HbA1c must be measured periodically to determine the minimum effective dose for the patient, to detect primary failure, i.e., inadequate lowering of blood glucose at the maximal recommended dose of medication; and to detect secondary failure, i.e., loss of adequate blood glucose lowering response after an initial period of effectiveness. Failure of oral agents is not necessarily caused by poor patient compliance, because beta-cell function gradually decreases in the natural course of the disease. Patients who are not well controlled by a first-generation sulphonylurea either primarily or secondarily may achieve good control when treated with a more potent second-generation agent.

Sulphonylureas are well tolerated, their most serious side effect is long-lasting hypoglycaemia which can be avoided by using the lowest possible starting dose and by selecting short-acting drug (not glibenclamide or chlorpropamide especially in elderly patients). Flushing occurs when chlorpropamide is combined with the use of

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alcohol. Sensitivity reactions (usually in first 6-8 weeks of therapy) which include transient rashes, thrombocytopenia, agranulocytosis and aplastic anaemia, are rare too. Generally sulphonylureas are not recommended for use in pregnancy, nursing mothers, or children. In elderly, or in patients with renal or hepatic insufficiency the initial dosing, dose increments, and maintenance dosage should be conservative to avoid hypoglycaemic reactions.

Biguanides:

These compounds were introduced in the 1950s for the management of type II diabetics. Phenformin, the first biguanide, was discontinued in many countries because of its association with lactic acidosis and it has generally been replaced by others such as buformin and metformin; but at present the later is the only one available for clinical use. The exact mechanism of action of metformin remains unclear. It exerts its effect by enhancing glucose uptake in skeletal tissues and by decreasing hepatic production of glucose. Some evidence suggests that it also slows down the intestinal absorption of glucose. Metformin reduces both the fasting and postprandial hyperglycaemia in 75 to 80 % patients with type II diabetes but has no effect on fasting blood glucose in normal subjects. A side benefit of metformin therapy is to improve hypertriglyceridaemia in overweight diabetics without the weight gain associated with sulponylurea or insulin therapy. Metformin has a half-life of 1 ½ to 3 hours, is not bound to plasma proteins, and is not metabolised in humans, being eliminated almost entirely unchanged by the kidneys. It is relatively safe in the absence of impaired renal function.

Metformin has been extensively used in many parts of the world except in the USA where it was approved for clinical use in 1995. Metformin is a good first-line drug in conjunction with diet for obese type II patients as well as for combination with a sulphonylurea in patients poorly responding to maximal doses of sulphonylureas. Both regimen result in significant reduction of fasting blood glucose and HbA1c values. Some studies have reported that adding metformin to insulin in type II obese diabetics results in significanct decreases in both fasting glucose and HbA1c levels and these are also accompanied by a significant decrease in the daily dose of insulin. Metformin is contraindicated in diabetics with renal or hepatic insufficiencies, alcoholics or in those with a propensity to develop hypoxaemia (e.g, diseases associated with cardiorespiratory insufficiency), because of the danger of lactic acidosis.

Metformin is available as 500 or 850 mg tablets, and usual dose is 500mg to 2500mgs. per day. It is always advisable to start with the lowest effective dose (500 mg once or twice a day) with meals and then gradually titrating its dose in order to avoid the frequently encountered side effects like nausea, abdominal discomfort, or diarrhea which are usually transient and dose-related. Hypoglycaemia does not occur with therapeutic doses of metformin. The risk of lactic acidosis is 10-15 times less than phenformin but this risk increases in the presence of hepatic or renal failure and excessive alcohol use, when metformin should not be prescribed. In view of the age-associated decline in renal function, metformin should not be prescribed to patients above the age of 70 years. Prolonged metformin therapy may lead to malabsorption and may cause a decrease in serum vitamin B 12 without clinical manifestations. Therefore, physicians should monitor the level of folic acid and vitamin B-12 in patients taking more than 2 gms per day of metformin.

Table 1: Comparison of new generation oral antidiabetic agents

Drug	Tablet size	Starting dose	Max Total daily dose	Schedule	Duration of Action	Glycaemic improvement *		
	(mg)	(mg)	(mg)		(hrs)	F.B.G.* reduction (mg/dl)	P.B.G.** reduction (mg/dl)	HbA1c reduction (%)
(A) Monotherapy								
1 Glimepiride	1,2 & 4	1	8	qd	up to 24	[illegible]	[illegible]	[illegible]
2 Acarbose	50 & 100	25	300	tid	4	[illegible]	[illegible]	[illegible]
3 Miglitol	25, 50 & 100	25	300	tid	4	[illegible]	[illegible]	[illegible]
4 Troglitazone	200, 300 & 400	200	600	qd	[illegible]	[illegible]	[illegible]	[illegible]
5 Repaglinide	0.5,1 & 2	16		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
(B) Combinations								
1 Acarbose plus Sulphonylurea						[illegible]	[illegible]	[illegible]
2 Miglitol plus Sulphonylurea						[illegible]	[illegible]	[illegible]
3 Troglitazone + Sulphonylurea						[illegible]	[illegible]	[illegible]
4 Repaglinide plus Metformin						[illegible]	[illegible]	[illegible]

*F.B.G. Fasting blood glucose **P.B.G. Postprandial blood glucose

B. New generation drugs:

Development of these drugs represents decisive progress after years of stagnation in the field of oral antidiabetic therapy. Several agents have found approval and entered the market: Glimepiride, alpha-glucosidase inhibitors, thiazolidinediones, and meglitinides.

I. Glimepiride:

It is the most recent second-generation sulphonylurea marketed for use in the treatment of type II diabetes. The primary action of this drug in lowering blood glucose, like other sulphonylureas, appears to be dependent on stimulating insulin release from functioning beta cells. It is completely (100%) absorbed from the intestine and is completely metabolised by the liver to relatively inactive metabolic products. The clinical studies so far show that it gives similar degrees of metabolic control as other second generation sulphonylureas. However, there are two distinct advantages for its use—firstly its long duration of action with a half-life of 5 hours, allowing once-daily administration improves compliance, and secondly its achievement of blood glucose lowering with the lowest dose of any sulphonylurea compound tends to increase its cost-effectiveness, which is an important issue for the developing countries.

Glimepiride is indicated as monotherapy or in combination with insulin to lower blood glucose in type II patients who cannot control their glucose level through diet, physical exercise, and weight reduction. It may also be used concomitantly with metformin, when diet, exercise, and glimepiride or metformin alone do not result in adequate glycaemic control. As with other sulphonylureas, no transition period is necessary when transferring patients to glimepiride and no exact dosage relationship exists between glimepiride and other agents. Patients should be observed carefully (1-2 weeks) for hypoglycaemia, when being transferred from longer half-life sulpholynureas (e.g glibenclamide and chlopropramide) to glimepiride, due to potential overlapping of drug effect. The usual starting dose of glimepiride as initial therapy is 1 mg once daily, administered with breakfast or the first main meal and maximum recommended dose is 8 mg once daily. Long term efficacy should be measured by monitoring periodically the fasting blood glucose levels and by measurement of HbA1c levels, usually at 3-6 months intervals. If patients do not respond adequately to maximal dose of glimepiride monotherapy, addition of metformin can be considered. The combination of glimepiride and metformin may have a synergistic effect, since both agents act to improve glucose tolerance by different primary mechanisms of action. This complementary effect has been observed with metformin and other sulphonylureas, in multiple studies. With concomitant glimepiride and metformin therapy, the desired control of blood glucose may be obtained by adjusting the dose of each drug. However, attempts should be made to identify the minimum effective dose of each drug to achieve the goal. With combination therapy, the risk of hypoglycaemia associated with glimepiride therapy continues and may be increased.

II. Alpha - glucosidase inhibitors :

This class of oral antihyperglycaemic drugs competitively inhibit a group of hydrolytic enzymes called alpha-glucosidases (comprising glucoamylase, sucrase, maltase, and alpha dextrinase) at the brush border of the intestinal lumen, thereby delaying the digestion of complex carbohydrates and thus they prevent sudden postprandial rise in blood glucose. They do not affect lactase activitiy and also do not influence absorption of free glucose. Two of this class are available for clinical use, namely Acarbose and miglitol.

Acarbose:

It is a sham sugar (oligosaccharide analog) and it has been shown to slow the release of glucose from complex carbohydrates by as much as 80% in upper part of small intestine. Very little acarbose enters the circulation since it is mainly inactivated in the gut. Clinical studies show that Acarbose as monotherapy or as combination therapy with sulphonylurea reduces HbA1c level by 0.5 to 1% and postprandial glucose concentration by approximately 50mg/dl.

Acarbose has been used extensively in patients with type II diabetes in several countries. There are two main indications for its use: (1) As monotherapy in patients poorly controlled on diet alone, and particularly to those with postprandial hyperglycaemia, and (2) as an adjunct to treat with diet and oral hypoglycaemic agents when metabolic control remains unsatisfactory. It may be particularly useful in patients poorly controlled on sulphonylurea who are unable to tolerate metformin therapy, and in elderly patients who should not be prescribed metformin, and in obese diet failures where weight gain with sulphonylurea is undesirable. For maximal benefit acarbose should be given with the first bolus of food. The recommended starting dose is 25mg once or twice daily which can be titrated upwards slowly to a maximum of 100mg three times a day. However, Acarbose does not cause weight gain and does not induce hypoglycaemia when used alone. But if combined with sulphonylurea it might increase the risk of hypoglycaemia in these patients. Common side effects with Acarbose (e.g flatulance, abdominal cramps, and diarrhoea) are due to fermentation of undigested sugar in the colon and this plus multiple daily dosage hampers patient's acceptance of Acarbose. However, tolerance is improved by a low starting dose (25 to 50 mg per day) which is slowly increased at weekly intervals. Systemic side effects are infrequent, some have reported slight elevation in hepatic transaminases especially with doses of 300mg per day, which generally reverse on stopping the treatment. Side effects have been also shown to improve with continued use.

Miglitol :

A more recent in this group, is structurally different from Acarbose in that it is a monosaccharide analog and is almost 6 times more potent in inhibiting sucrase. Unlike Acarbose which is poorly absorbed, miglitol is almost completely absorbed in the jejunum to circulate in the blood and then concentrate entirely in enterocytes, whence it acts to inhibit the intestinal alpha-glucosidase enzymes. Miglitol does not appear to directly interfere with the absorption of glucose by the sodium-dependent glucose tranporter. The starting dose is 25mg daily with gradual increase to a maximum of 100mg three times a day. Postprandial glucose and HbA1c levels improve to a similar degree as with Acarbose, when used either singly or in combination with sulphonylurea. Miglitol has also similar side effect profile as Acarbose.

III. Thiazolidinedione group (insulin-sensitizers): This group of drugs, also known as glitazones, includes Troglitazone, Pioglitazone and Rosiglitazone, which are already in the market; and the most recent one Nateglinide which still awaits approval.

Troglitazone:

It is the first member of this new class of oral antihyperglycaemics which does not cause hypoglycaemia when used alone. The mechanism of action of troglitozone is unclear but needs the presence of circulating insulin and the metabolic state of insulin resistance for its effectiveness in humans. Like metformin it appears to potentiate insulin action and it works mainly by enhancing glucose uptake in peripheral tissues especially in skeletal muscle and by reducing hepatic glucose output. It reduces hyperglycaemia, hyperinsulinaemia, hypertriglyceridaemia and tends to slightly elevate LDL and HDL cholesterol in insulin - resistant patients without causing gain in weight or drug induced hypoglycaemia. It does not lower blood glucose in normal subjects. There is some evidence that troglitazone interacts with the PPAR-GAMMA (peroxisome-proliferator-activated-receptor-gamma), a group of nuclear transcription factors, which regulate genes involved in carbohydrate and lipid metabolisms. The effect on insulin sensitivity may result from decreased formation of non-esterified fatty acids. Troglitazone is completely metabolised by the liver to inactive metabolites which make it useful in patients with compromised renal function unlike metformin.

Troglitazone was first introduced for combination therapy with insulin. Adding troglitazone to patients receiving insulin resulted in significant decrease in fasting blood glucose and HbA1c levels which were accompanied by significant decrease in the daily dose of insulin. Subsequently, as montheraphy troglitazone was found to be associated with the significant reduction of postprandial glucose by approximately 40 to 60mg/dl and HbA1c value of 1 to 1.5%. Further, in patients in whom sulphonylurea therapy has failed, simply switching them to either troglitazone or metformin does not improve glycaemic control; however, adding either agent to the sulphonylurea therapy does result in marked improvement. It has been reported in group trials that patients treated with the troglitazone plus sulphonylurea combination, can achieve significant reductions in both fasting blood glucose and HbA1c levels much more than either agent did alone. The use of combination therapy with troglitazone and metformin has yet to be compared in large trials, although some have reported additional improvements in glycaemic control. Adverse hepatic effects like elevations in serum transaminase values greater than three times the normal have been reported in patients on troglitazone. Therefore, this drug is contraindicated in patients with abnormal liver function. The current recommendations for troglitazone are LFT to be checked monthly during first 8 months of therapy, every other month for rest of the first year and then periodically thereafter.

In summary, the metabloic effects of troglitazone remain of considerable interest. However, until its safety regarding the frequency of hepatic toxicity is resolved, troglitazone should not be used in type II diabetics who are satisfactorily managed on other hypoglycaemic therapy. It should be reserved for severely insulin-resistant type II patients poorly responding to maximal therapy, or for those obese moderately resistant type II patients who are poorly responding to insulin and in whom poor renal function contraindicates the addition of metformin.

Nateglinide:

Even though questions regarding the use of troglitazone remain because of hepatic side effects, it is likely that in future other related thiazolidinediones will be produced which share the same therapeutic effects as troglitazone but are less prone to producing hepatocellular damage. One product which is nearing the end of its development is nateglinide, the most recent member of the glitazone family of drugs. A study with this drug, reported from the U.S.A., found that the drug was successful in producing insulin 'spikes' after meals. Insulin levels then dropped, so that overall insulin exposure was reduced. This is regarded as desirable as it reduces the stress on beta cells and also the risk of hypoglycaemia. Furthermore, fewer pati nateglinide reported symptoms of hypoglycaemia than patients on sulphonylurea treatment (glyburide / glibenclamide). Nateglinide is intended to be used either as monotherapy or as combination therapy with metformin.

IV. Meglitinides:

The only drug available for use from this class is a benzoic acid derivative—Repaglinide. It is a non-sulphonylurea short acting agent that lowers the blood glucose levels acutely by stimulating the release of insulin from the pancreas, an effect dependent upon functioning beta cells. It closes the ATP-sensitive potassium channels but with very different kinetics than the sulphonylureas, i.e. via a target protein different from other secretagogues. Despite the absence of a sulphonylurea component in Repaglinide, its efficacy seems to be similar to sulphonylurea as monotherapy. This drug is unique in that it is very rapidly absorbed from the intestine and is completely metabolised in liver to inactive biliary products with a half-life of less than 1 hour. These kinetics mimic the effects of quick-acting insulin and suggest its potential value as a preprandial agent in type II diabetics with particular usefulness in elderly patients and those with renal disease.

It is indicated in patients with type II diabetes whose hyperglycaemia can no longer be controlled satisfactorily by diet, weight reduction and exercise. Repaglinide can be concomitantly given in combination with metformin in type II patients who are insufficiently controlled with metformin alone. Patients can be transferred directly from other oral hypoglycaemic agents to repaglinide. However, no exact dosage relationship exists between repaglinide and other oral agents. It is available as 0.5, 1 and 2 mg tablets and should be dosed 15 minutes before each meal. The recommended starting initial dose is 0.5mg for patients with HbA1c value under 8% and 1 to 2 mg for patients with higher HbA1c or in those previously treated with other oral agents. Doses may be increased up to 4 mgs with meals to a maximum of 16 mg per day. Use of repaglinide in case of secondary failure to insulin secretagogues has not been investigated in clinical trials. However, long term clinical trials investigating the combination with other insulin secretagogues and acarbose or combination therapy with insulin or thiazolidinediones are still awaited. Undesirable effects like hypoglycaemia, abdominal pain, diarrhoea, nausea and vomiting; and isolated cases of increase in liver enzymes have been reported in clinical trials. Combination treatment therapy with metformin is associated with an increased risk of hypoglycaemia.

Conclusion:

In summary, the range of oral antihyperglycaemic agents in the market has grown markedly over the last few years. The new generation drugs have improved type II diabetes mellitus therapy, preventing the need for insulin in many patients and allowing some patients previously treated with insulin to switch to oral agents alone.

The task for the prescriber is to decide if these recently introduced drugs result in improved outcomes for the patients which should include the key concepts such as the achievement of tight glycaemic control with an acceptable adverse effect profile and in turn reduction in the long term complications of the disease. Furthermore, treatments of type II diabetes mellitus continue to appear in developing countries with limited health resources, yet the relative high cost of the new drugs will continue to be a limiting factor of the prescribing physician. Finally, assessing the claims of superiority of new fashioned drugs supplanting the old ones, the clinicians need to remain mindful that statistically significant differences do not necessarily mean clinically useful differences. Till we gain more knowledge let us continue the current best and optimal practices of medicine.

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EFFECT OF ORAL CLONIDINE PREMEDICATION ON ANXIETY AND SEDATION IN PATIENTS UNDERGOING TURP UNDER SPINAL ANAESTHESIA

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Abstract: Sixty patients were studied to find out the effect of oral clonidine premedication on sedation and anxiety in patients undergoing trans-urethral resection of prostrate (TURP) under spinal anaesthesia with 5% Lidocaine. The patients were all males and of ASA physical status II in the age range of 50-70 years. Patients were randomly allocated to study group & control group consisting of 30 patients each. 150mg of oral clonidine was compared with a placebo given orally 90 minutes before lidocaine spinal anaesthesia in this double blind study. Anxiolysis was assessed by a 100 mm visual Analogue Scale (VAS) and sedation was assessed by a four point scale. Clonidine produced significant anxiolysis before and during spinal anaesthesia ($p < 0.001$) Clonidine also produced grade II sedation in significant number of patients (33.33%) during spinal anaesthesia and in the post- operative period ($p < 0.25$, < 0.01 respectively).

Key words: Premedication : Clonidine, Anaesthesia : Spinal, Monitoring : Sedation, Anxiety.

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INTRODUCTION

Pre- operative sedation and anxiolysis are often the main objectives of premedication(1). Clonidine an alfa-2 agonist has been shown to possess anxiolytic and sedative properties; the anxiolytic effect being comparable to that produced by benzodiazepines(2-5). As such it has been successfully used as a premedicant in general as well as in regional anaesthesia. Clonidine has been to shown to exhibit potential analgesic properties in humans, the site of action being both spinal and supra-spinal.

Sedation is one of the most consistent side effects mediated by central alpha-2 receptors(6). While this property is an undesirable side effect when clonidine is administered in patients with hypertension, it has been used to great advantage as premedicant in anaesthesia. Recently locus ceruleus was shown to be a principle region responsible for the sedative effects(7).

In this randomized double blind study we have tried to evaluate the effect of clonidine pre-medication (150mg) on sedation and anxiety in the peri-operative period in patients undergoing transurethral resection of prostrate under spinal anaesthesia with lidocaine.

PATIENTS AND METHODS

Sixty elderly male patients of ASA-physical status I and II scheduled for TURP under spinal anaesthesia gave their informed consent for this randomized double blind study. Patients on anxiolytics and beta-blockers were excluded from the study.

On the pre-operative visit, the visual analogue scoring system(VAS) was explained to the patients. The patients were randomly allocated to one of the two groups. Group A(n=30) the study group received oral clonidine(150mg) 90 minutes before spinal anaesthesia with lidocaine. Group B(n=30) included the control group and received placebo 90 minutes before the spinal anaesthesia.

On arrival of the patients in the anaesthesia room lactated ringers solution was administered as a bolus of 6ml/kg in the first 15 minutes before spinal block followed by 8ml/kg for the first hour. Lumbar puncture was performed in the sitting position in L4-L5 space by a 25 guage spinal needle under all aseptic measures. After obtaining a free flow of CSF; 2ml of 5% lidocaine solution at a rate of 0.25 ml/sec was injected into the sub-arachnoid space.

All patients were monitored for heart rate, non-invasive blood pressure and oxygen saturation by an automated device Datex - CH-2-22-64 S/N 312027 and a pulse oximeter respectively during the procedure.

Sedation was assessed by a blinded observer on a four point scale(Awake -1, Drowsy-2, Drowsy but responsive to verbal commands-3 and unarousable to physical stimulus-4). Anxiety was assessed by a 100mm visual analogue scale. 0 mm = being completely calm

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and 100 = worst possible anxiety. Sedation and anxiety were assessed every 10 mts starting just before clonidine administration. The parameters were expressed as mean±SD. Students 't' test and chi-square test with yates correction were utilized for analysis. A p value of <.05 was considered significant.

Table II: Grades of sedation in clonidine group and control group.

Grade of sedation	Clonidine group (n=30)	Control group (n=30)	x^2df_1 (yc)	p	Remarks
1. Before premedication					
Grade I No(%)	30(100)	30(100)	-	-	-
2. After premedication					
Grade I No(%)	25(83.33)	28(93.33)	1.4	>0.1	NS
Grade II No(%)	5(16.67)	2(6.67)	0.65	>0.25	NS
3. During spinal anaesthesia					
Grade I No(%)	20(66.67)	28(93.33)	0.74	>0.25	NS
Grade II No(%)	10(33)	2(6.67)	5.10	<0.025	S
4. Postoperative period					
Grade I No(%)	20(66.67)	30(100)	0.1	0.75	NS
Grade II No(%)	10(33.33)	0(0)	9.72	<.001	(S)

NS - Not significant

S - Significant

RESULTS

Observations were made from two groups of 30 patients each i.e, clonidine and control group. The two groups were comparable with respect to age sex, weight, height and ASA-physical status. During spinal anaesthesia 10 patients in the clonidine group and only 2 patients in the control group had grade II sedation which was statistically significant.

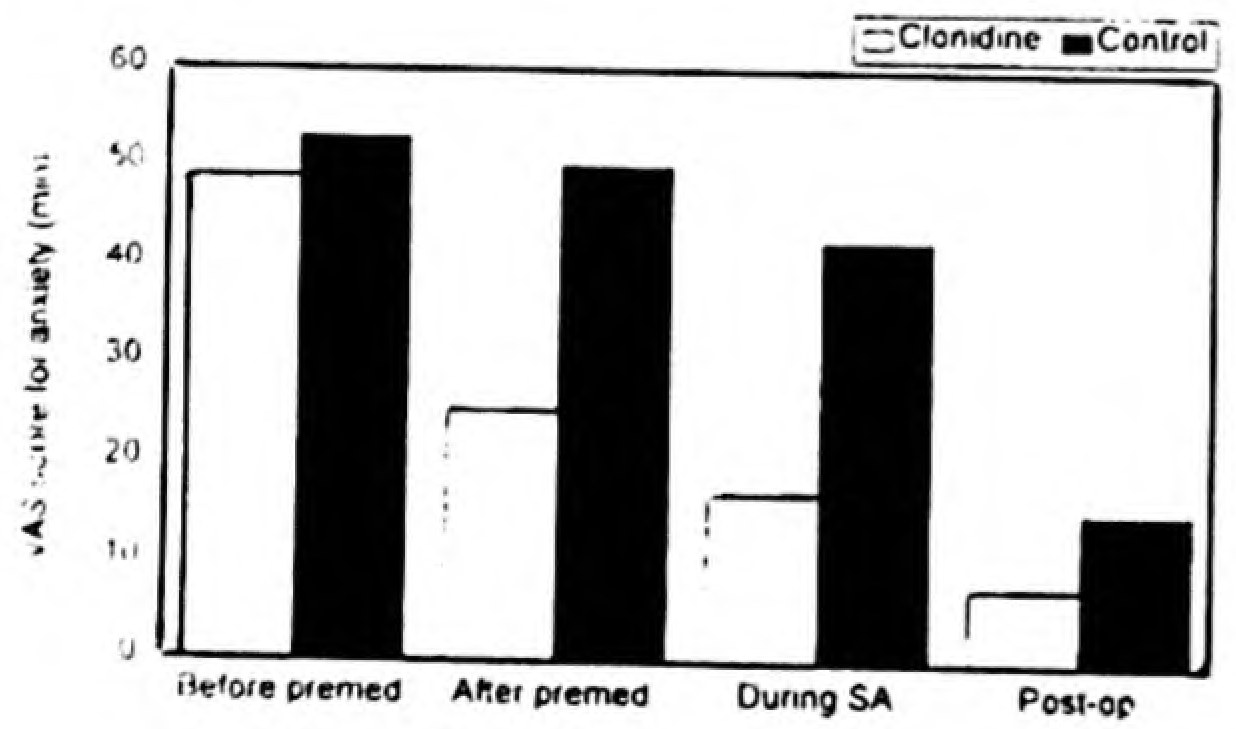

Fig 1 Comparison of VAS score for anxiety between clonidine and control group

In the post-operative period 10 patients i.e. 33.33% had grade II sedation compared to none in the control group as shown in table II.

Also clonidine produced significant anxiolysis, before and during spinal anaesthesia p <0.001. Post-operatively too, the anxiety was significantly less in patients of clonidine group compared to control group p <0.001 shown in fig. 1. No patient in either group developed haemodynamic or respiratory depression.

DISCUSSION

Pre-operative sedation and anxiolysis are often the main objective of pre-medication. Clonidine has recently been introduced as pre-anaesthetic medicant because of its benzodiazepine comparable anxiolytic and sedative properties(2-5).

This well known sedative and anxiolytic effect of clonidine may be due to decreased tonic activity of the locus ceruleus, which modulates the stimuli arising at the central nervous system(8). Pre-medication with oral clonidine in the present study produced both sedation and a significant reduction in the anxiety, yet the patients were responsive and free from subjective side effects. Before premedication all patients had comparable sedation grades and anxiety scores(p>.21). Significant proportion 33.33% of patients were sedated (grade - II) during spinal anaesthesia as well as in the post-operative, period upto 6 hrs (p<0.025).

Moreover, the patients in clonidine group continued to have significantly less anxiety before spinal anaesthesia, during spinal anaesthesia and in the post-operative period(upto 12 hrs). These findings are in harmony with many studies conducted in the recent past (4,9-11).

However, Kumar S(3) et al have reported that 88% of their patients were sedated after oral clonidine administration. This percentage is however, much higher than that of ours. Since a dose-response sedative effect of oral clonidine premedication has been demonstrated by Kirton S Filos(10) et al the higher percentage of sedated patients in the Kumar S et al's study is most likely because they used a higher dose 300mg of oral clonidine as compared to a smaller one 150mg used in the present study. Since clonidine has been shown to possess a biphasic sedative effect (in which clonidine at lower doses acts anxiolytically and at higher doses anxiogenically through an a1-action (12,13). we used a smaller dose of 150mg clonidine which resulted in significant sedative and anxiolytic effect without any haemodynamic depression.

We conclude that pre-medication with 150mg of oral clonidine produces adequate sedation and anxiolysis in the intra and post-operative period without any significant haemodynamic or respiratory depression.

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OPEN METHOD VERSUS CAPITONNAGE IN MANAGEMENT OF HEPATIC HYDATIDOSIS IN CHILDREN

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***Abstract:** Hepatic hydatid cysts are not uncommon in children, and a large number of cases are surgically treated every year in Kashmir. Capitonnage is used very commonly to deal with the residual pericyst cavity after enucleation of the endocyst, but its recognised major complications are hydrops and secondary infection in the residual cavity. In this randomized study prospective and retrospective evaluation was done to compare capitonnage with open method of treating hepatic hydatid cysts. In 42 children, Group I (n=23) treated by capitonnage and group II (n=19) treated by the "open" method, there was no mortality. Group II patients had a more rapid postoperative recovery and fewer post-operative complications, as well as a shorter total hospital stay, as compared to Group I patients.*

***Key Words:** Hydatid cyst, Enucleation, Capitonnage.*

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Introduction:

Hydatid disease is a serious and challenging parasitic infestation, known to affect humans since ages[1] and continues to afflict thousands of people globally, each year. The causative parasite, Echinococcus granulosus is responsible for the disease in the majority of cases while E. multilocularis causes the "alveolar" form of hydatid disease in some patients. Humans, as intermediate hosts of the larval stage, become infested with the parasite after ingestion of the ova, which develop into cysts in any of the viscera, most commonly the liver, followed by the lungs, spleen, kidneys and peritoneum[2].

Many countries, including India, are endemic for hydatid disease, its incidence being highest in the Turkana district of Kenya[3]. Diagnosis is usually made using a combination of serologic and radiological investigations, complimented by a thorough clinical history and examination. Presently, ELISA for hydatid disease is the most reliable serologic test, being superior to other serologic tests like the complement fixation (CF) and indicrect haemagglutination (IHA) tests for diagnosing hydatid disease[4,5]. Ultrasonography is the most suitable and accurate means of diagnosing hydatid cysts radiologically, especially the hepatic cysts, while CT scanning is invaluable especially when USG findings are equivocal.

The management of hydatid cysts of liver has undergone many modifications[6,7,8], with methods like USG guided percutaneous aspiration and primary chemotherapy with benzimidazole compounds being reported to be effective. It is established however, that these newer methods cannot be applied to multivesicular cysts or to complicated cysts, for which surgery is the only sure method of removing the cyst and eliminating the parasite from the body[9-12]. Surgical treatment of hepatic hydatid cysts underwent many modifications during the latter half of the twentieth century. The basic technique of cyst puncture, followed by aspiration of the cyst contents, injection of scolicidal agents, re-aspiration and removal of the endocyst remain the same. It is the management of the residual cyst cavity that is the most problematic aspect of management of hepatic hydatid cyst[13,14].

Initially, these residual cyst cavities used to be dealt with the "marsupialization", but unacceptably high rates of complications[14] were reported, hence this procedure fell into disregard. Later, there were reports of successful treatment of hepatic hydatid cysts by enucleation and external tube drainage[14,15], but problems of increased infection and prolonged biliary drainage and/or fistulae were worrisome[15]. Capitonnage or primary obliteration of cyst cavity using continuous circular, opposing, absorbable sutures has been used successfully and has shown better results than tube drainage[13], but the cysts need to be uncomplicated, if this technique is to be used. Many reports have appeared regarding the "open-method" of dealing with the residual hydatid cyst cavities, whereby cyst cavity is left open to peritoneal cavity, and the results have been reportedly superior to capitonnage[16,17].

Material and Methods:

The present study was conducted in the Department of Paediatric Surgery, SKIMS both retrospectively and prospectively from 1995 to April, 2000, on all the children

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aged 2-14 years, admitted with hepatic hydatid cysts. The study group comprised 42 children suffering from hepatic hydatid cysts diagnosed on abdominal ultrasonography and/or CT Scanning, supported by various laboratory and serological tests (Table 2). Patients with previous or concurrent pulmonary or extra-hepatic hydatid cysts were excluded from the study.

All the children in the study group were subjected to a detailed clinical examination and a complete hemogram, kidney and liver function tests, a blood coagulogram, and ELISA for hydatid disease were performed. Subsequently, a chiest and an abdominal x-ray was obtained followed by a detailed and thorough ultrasonography of the abdomen. A CT scan of the abdomen was obtained only in whom results of ultrasonography were indeterminate or inconclusive. A total of 73 hepatic hydatid cysts were visualised using USG/CT scanning in 42 patients. The number and location of cysts was detected to determine the incision before surgery.

Surgical Technique

Surgery was performed under all aseptic precautions. The operative field was carefully protected from hydatid fluid spillage using packs soaked in scolicidal solution. Hydatid fluid and "sand" was evacuated by needle aspiration and electric suction devices. Dilute cetrimide solution was used as a scolicidal agent and injected into the aspirated cysts. It was reaspirated after 5 minutes. Subsequently, the endocyst was enucleated, leaving behind a residual hydatid cyst cavity, which was carefully examined for bile leakage or bleeding. The exocyst wall, protruding from the liver surface was excised. The remaining cavity was randomly chosen to be dealt with one of two methods, i.e. capittonage, (Group I, n=23) or the "open-method" (Group II, n=19), wherein the cyst cavity was left open to peritoneal cavity and the abdomen closed back. Postoperatively, all the patients were put on oral albendazole, 10mg/kg/day for three 28 day courses, with monthly rest period in between. Patients from both groups were observed for postoperative recovery and complications (if any). The condition at discharge and the total hospital stay for both the groups was recorded. Patients were subsequently followed up using serial ultrasonography to monito residual cyst size and time taken for disappearance (if any) of the residual cyst cavity.

Observation and Results

42 children comprised the study group, from which Group I consisted of patients treated by capittonage n=23, 16 males and 7 females) while Group II consisted of those who were treated by the "open -method" (n=19, 11 males, 8 females).

Epigastric discomfort and pain was the most frequent presenting symptoms (approx. 70%) while an upper abdominal mass and/or hepatomegaly were the commonest presenting signs (Table I). Uricaria and itching was present in 9% of patients whereas the typical "hydatid-thrill" could be elicited in only one patient. No anaphylactic reactions were noted.

Table-I: Clinical signs/symptoms in our study patients

Clinical sign/symptom	No. of patients	%
Symptoms		
Epigastric pain	28	66
Epigastic discomfort	29	68
Fever only	7	15
Fever with rigors/chills	3	7
Jaundice	2	5
Anorexia	4	9
Uricaria and Itching	4	9
Asymptomatic	3	7
Signs		
Epigastric mass	33	78
Epigastric or right hypochondrial	15	36
Tenderness		
Hepatomegaly	18	43
Malnutrition	7	15
Hydatid thrill	1	2.3

Eosinophilia was present in 21% of patients while the liver functions were deranged in 23% of patients (Table 2). ELISA for hydatid disease had a sensitivity of about 86% in our study. Ultrasonography alone established the diagnosis of hydatid cyst of liver in 91% of patients while CT scanning had high sensitivity (100%) in those cases, that could not be diagnosed with certainty by USG.

Table - 2: Laboratory and Radiological Parameters

Laboratory/Radiologic parameters	No. of patients tested	No. of +ve or abnormal results	Sensitivity (%)
Eosinophilia	42	9	21
Kidney function tests	42	nil	-
Liver function tests*	42	8	19
Coagulogram	42	3	7
Plain abdominal/chest x-ray	42	10	23
ELISA for hydatid disease	42	36	86
USG abdomen	42	38	91
CT Scan abdomen	4	4	100

**Considered abnormal if Sr. Bilirubin > 1.2mg%, SGOT>40IU/dl, SGPT>40IU/dl, ALP >270IU/dl.*

Patients in group I showed a prolonged recovery postoperativiely, as compared to those in Group II (table 3). 4 patients (14%) from Group I developed post-operative prologned fever while one patient (4.3%) developed a residual liver abscess one week after discharge and required surgical drainage patient developed severe wound sepsis. In group II no patient developed wound sepsis or residual liver abscess, while only two patients (10%) developed prolonged postopertive fever.

Table-3: Postoperative complications, recovery time and ultrasonographic follow up in our patients

Postoperative complications	Group I (capitonage) n = 23	Group II (open-method) n=19
Wound sepsis	1(4.3%)	nil
Residual liver abscess	1(4.3%)	nil
External biliary fistula	Nil	Nil
Fever	4(14%)	2(10.5%)
Postoperative recovery*		
Time to restoration of Normal temperature (Days)	6.08(±1.84)	4.1.(±1.48)
Total Hospital stay (Days)	12.96(±2.3)	10.05(±1.64)
Ultrasonographic follow-up (At discharge)		
Without residual cavities	2(8.6%)	6(31%)
Residual cavities		
With ½ reduction in size	14(61%)	10(52%)
With no reduction in size	8(34%)	2(10%)

* *Figures are "mean-values"*

Patients in Group I took a mean duration of 6.08±1.84 days for restoration of normal temperture post-operative while those from Group II took 4.10±1.48 days for restoration of normal temperature. The mean hospital stay was shorter for Group II patients (10.05±1.64 days) compared to Group I patients (12.96±2.3 days).

Follow-up ultrasonography during a median follow up period of 11 months (range 8-14 months) revealed that Group II patients made a rapid recovery with rapid shrinkage of residual cavities (Table 3). 31% of patients from Group II had no residual cavities at discharge while the same figure was only 8.6% in Group I. There was no mortality in our study.

Discussion:

Hydatid disease in children is common in countries where sheep and cattle farming practice are widespread, like Kenya, Australia, India and Iran and Middle-East. Liver and lungs are the most commonly affected organs[2]. Most children get infected due to close contact with dogs, though consumption of raw, unwashed or uncooked food soiled with dog faeces plays an important role in transmission of the disease, especially in Kashmir. Cyst growth is very slow, hence hepatic hydtid cysts may remain clinically silent for a considerable period[2]. The presenting symptoms and signs, like epigastric pain, jaundice and biliary colic are related to the mechanical effects of cyst growth and compression of adjacent structures[18].

David L. Morris in 1992[19] has stated in his report on hydatidosis that hydatid disease is more common in rural than in urban populations, which has been true in our study too, where 66% of the patients in the study group belonged to villages. Many factors are responsible for this rural-urban difference; The behavioural patterns and life-styles of health education, inadequate sanitation and increased exposure to cattle and dogs put the village dwellers more at risk of contracting the disease. 27 patients (64.28%) in our study were males while 15 patients (35.72%) were females. Aziz Nourmand[20] in his tudy on hydatid disease in children also reported a male preponderance. Similar observation has also been made by Langer et al in 1983[15]. Epigastric pain and discomfort have been the most common presenting symptom and sign in our study (66-68%). A history of jaundice was present in 5% patients. 78% of patients in our study had a palpable abdominal mass especially in the upper abdomen, but only one patient showed the classic "hydatid thrill". 7% of the patients in our study were asymptomatic.

Langer et al in 1983[15] have also reported in their study that abdominal pain and upper abdominal mass are the commonest modes of presentation of hepatic hydatid cysts.

Liver function tests were performed in all the patients in our study. Farrokh Saidi in 1997[21] clearly stated that liver functions are usually not compromised by hepatic hydatid cysts because of leisurely growth of cysts, allowing enough time for compensation, but large cysts or multiple hydatid cysts studding the whole of the liver can lead to deranged liver fucntions. In our study, LFTs were deranged in 19% of patients while blood coagulation profile was deranged in 7% of patients. Similar results of liver functions of patients with hepatic hydatid cysts have been reported by Langer et al in 1983[15].

We have not used the indirect haemagglutination and complement fixation texts in our study for the serological diagnosis of hydatid disease because superior results with ELISA are well documented[1,5]. In our study, ELISA for hydatid disease demonstrated a sensitivity of 86%. Similar results with ELISA have been reported by Farag et al[5] and Dottorini et al[4].

In our study, we have used ultrasonography in all cases. 38 cases could be diagnosed correctly using USG alone, giving a sensitivity of about 91%. This is comparable to the results of Gharbi et al[22], and E.A. Nron[23]. USG is the "gold standard" in diagnosis of hydatid disease of liver and is also invaluable for post-treatment follow up of such cases[23].

Surgery remains the only sure method of completely eradicating the parasite from the body, whether the cyst is simple or complicated. The basic goals of surgical management of hepatic hydatid cysts are (1) Removal of the endocyst (2) Neutralization of viable parasite, and (3) Management of residual cyst cavity[15].

Removal of the endocyst and neutralization of the viable parasite are the two important steps, so far as the elimination of the disease from the host is concerned; However, management of the residual pericyst cavity has a direct bearing on the post-operative course, recovery and complications[14]. Previously, such cysts used to be "marsupialised", but unacceptably high morbidity and mortality rates were noted with this procedure. For instance, Papadimitrio et al[24] reported a morbidity rate of >25% with marsupialisation. They further recommended that management of the pericyst cavity be individualised according to whether the cyst cavity is simple or complicated (e.g. biliary leak or infected), the latter ones being best treated by external tube drainage. Langer et al[15] in 1983 reported another method of management of uncomplicated lhydatid cyst cavities of liver, viz, capitonnage, whereby the pericyst walls of residual cyst cavity are opposed by continuous circular, absorbable sutures. There are other reports about good results of capitonnage[13], but a recognised postoperative complication is "hydrops" or a collection of blood and/or bile from unrecognised "oozers" in the exocyst wall, leading to secondary infection[17]. Barros[25] reported a 1.4% incidence of such infection while Saidi and Nazaria[16] described a method of freezing a funnel to the exocyst wall and opening the later with residual cavity directly open to the peritoneal cavity.

In our study, we too have used the "open" method of treating hepatic hydatid cysts in 19 patients with simple, unilocular hydatid cysts (group II patients), whereas capitonnage has been used to treat 23 other patients with similar hepatic hydatid cysts. It was observed that the post-operative complication rates were higher in Group I patients (Table 3). None of the Group II patients developed wound sepsis or residual liver abscess, while only 10% of these patients developed post-operative fever, as compared to 14% of patients in Group I, who developed post-operative fever. The time taken for restoration of normal temperature postoperatively was shorter (4.1±1.48 days) in Group II patients, as compared to Group I patients (6.08±1.48 days). The total hospital stay also was shorter in Group II patients (10.05±1.54 days) as compared to Group I patients (12.96±2.30 days).

The ultrasonographic examination at discharge of the patients from our study group revealed that 31% of patients in Group II had no significant residual cavity in the liver whereas the same figure was only 8.6% in Group I patients (Table 3). 34% of the patients from Group I had no decrease in the size of residual cavity at discharge, while this figures was only 10% in Group II patients. No complication and/or recurrence were noted in Group II patients during a median follow up of 11 months (Range 8-14 months). Mortality in our study was nil. Similar results using the "open" method of management of hepatic hydatid cysts have been reported by Saidi and Nazrian[16] and X Wu, JZ Tan et al[12].

The above study thus shows that the "open" method of management of hepatic hydatid cysts is an easy and safe procedure, entailing a shorter operating time and rapid postoperative recovery.

Conclusion:

After the completion of the above study, we conclude that for the management of uncomplicated hepatic hydatid cysts, the open method should be favoured because.

1. It is technically easier and safe
2. It entails a shorter operating time.
3. Postoperative morbidity is lesser.
4. Postopertive recovery is faster giving a shorter total hospital stay.

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JK-PRACTITIONER

STUDY OF TUBERCULOUS LYMPHADENITIS SPECTRUM OF CYTOMORPHOLOGIC CHANGES AND ACID FAST BACILLI POSITIVITY IN FINE NEEDLE ASPIRATES FROM LYMPH NODES AFFECTED BY TUBERCULOSIS: AN ANALYSIS OF 215 CASES.

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ABSTRACT: *The study presents a detailed analysis of fine needle aspiration (FNA) smears from 215 clinically diagnosed patients of tuberculous lymphaniditis with a correlation between gross appearance of the aspirate, cytomorphologic features and acid-fast bacilli positivity. The aspirate was of three types: (1) Mixed with blood, (2) Purulent and (3) Cheesy. The main cytomorphologic feature was presence of epithelioid cell granulomas with or without Langhan's giant cells. These epithelioid cell granulomas were present in all (100%) cases in which the aspirate was mixed with blood but lowest acid-fast bacilli positivity of 23.3% was found in these cases. Highest acid-fast bacilli positivity was seen in cases in which aspirate was purulent (i.e. 74%), but had epithelioid cell granuloma formation in only 27 out of 73 (37%) cases. Epithelioid cell granulomas were present in 84.6% cases in which aspirate was cheesy with AFB positivity of 65.3%. These findings stress the importance of introducing Ziehl-Neelson staining in smears of all cases suspected of tuberculosis in etiology as a routine practice, particularly in purulent aspirates.*

Key words: *FNAC, Tuberculosis, Granuloma*

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Introduction

Tuberculosis is ubiquitous in nature and its incidence varies from country to country. Though tuberculosis has been gradually decreasing in most of developed countries but is still a major public health problem in developing countries. It is estimated that 8.8 million cases of tuberculosis occurred world-wide in 1995, 95 percent being in developing countries of Asia (5.5 million)[1]. This is of particular relevance to our country where the prevalence rate has been stated to be around 400 per 1,00,000 population as compared to 9.5 in countries like U.S.A. and some in Europe[2]. Tuberculous lymphadenitis is an important differential diagnosis in any case presenting with lymphadenopathy as lymph node presentation is one of the commonest presentations of extrapulmonary tuberculosis.

Fine needle aspiration is a simple, easy to perform, quick and less expensive diagnostic aid with high degree of specificity and sensitivity for diagnosis of various neoplastic and non-neoplastic diseases[3]. Although fine needle aspiration cytodiagnosis has increased rapidly in last four decades, there are only few studies on the ease, with which aid-fast-bacilli can be demonstrated in the same aspirated material. Cytomorphologic features of the aspirate from tuberculous lymph nodes together with the Ziehl-Neelson staining of the same aspirate to demonstrate the acid-fast-bacilli gives a good diagnostic value of fine fine needle aspiration.

A low percentage of tuberculous lesions are positive for acid-fast-bacilli in histologic sections. Lucos[4] reported only 18 percent positive rate. With the use of fluorechrome techniques, Krishnaswami[5] et al and Huhti[6] et al found between 25 percent and 55.8 percent of cases of tuberculous lymphadenopathies to be positive for acid-fast-bacilli in histologic sections. Culture of aspirate or of biopsied material would be conclusive but it may be beyond the scope of many centres with limited resources and personnel in a country like India. Moreover, culture for mycobacteria takes a minimum period of 6-9 weeks[7].

Material and Methods

This study was carried out on clinically diagnosed and therapeutically proved cases of tuberculous lymphadenitis to critically evaluate the rate of acid-fast bacilli positivity. The age of the patients ranged from 2 to 70 years. The male to female ratio was 1:1.3. Varying sites of lymphadenopathy (i.e. cervical, axillary and inguinal) were aspirated. Fine needle aspiration was performed with a 22 gauge needle and a 20 ml disposable plastic

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syringe. To prevent sinus formation, aspiration was done in antigravity direction. Following aspiration, material was spread on glass slides. Two to three smears were air dried and stained by May-Grun Wald-Giemsa stain and two smears from each case were stained by Ziehl-Neelson method and screened for acid-fast-bacilli. If both smears were negative for acid-fast-bacilli, a third smear was also stained by Ziehl neelson method and examined. A record of all the relevant findings including gross appearance of the aspirate was made. According to the nature of aspirate, the smears were grouped into three categories and evaluated accordingly:-

1. Mixed aspirate (mixed with blood),
2. Purulent aspirate (which was purulent) and
3. Cheesy aspirate (cheesy in nature)

Results

While screening May-Grunwald Giemsa stained smears, the main cytomorphologic feature was presence of epitheloid cells. Langerhan's giant cells and necrosis; epithelioid cells, arranged in clusters (granulomas) with pale blue cytoplasm and indistinct cell membrane. Nuclei of epithelioid cells were elongated with fine and reticular chromation. Langerhan's giant cells had multiple nuclei arranged either at the periphery in a semicircle fashion, imparting a horse-shoe appearance, arranged in one area or distributed haphazardly. The results achieved are shown in tables.

Table - 1
(Showing nature of aspirate)

Total No. of cases	Nature of aspirate	No.	Percentage
215	Mixed with blood	90	41.9
	Purulent	73	34.0
	Cheesy	52	24.1

Aspirate was mixed with blood in 41.9% of cases, followed by purulent type of aspirate in 34.0%, Cheesy type of aspirate was observed in 24.1% of tubercular aspirates.

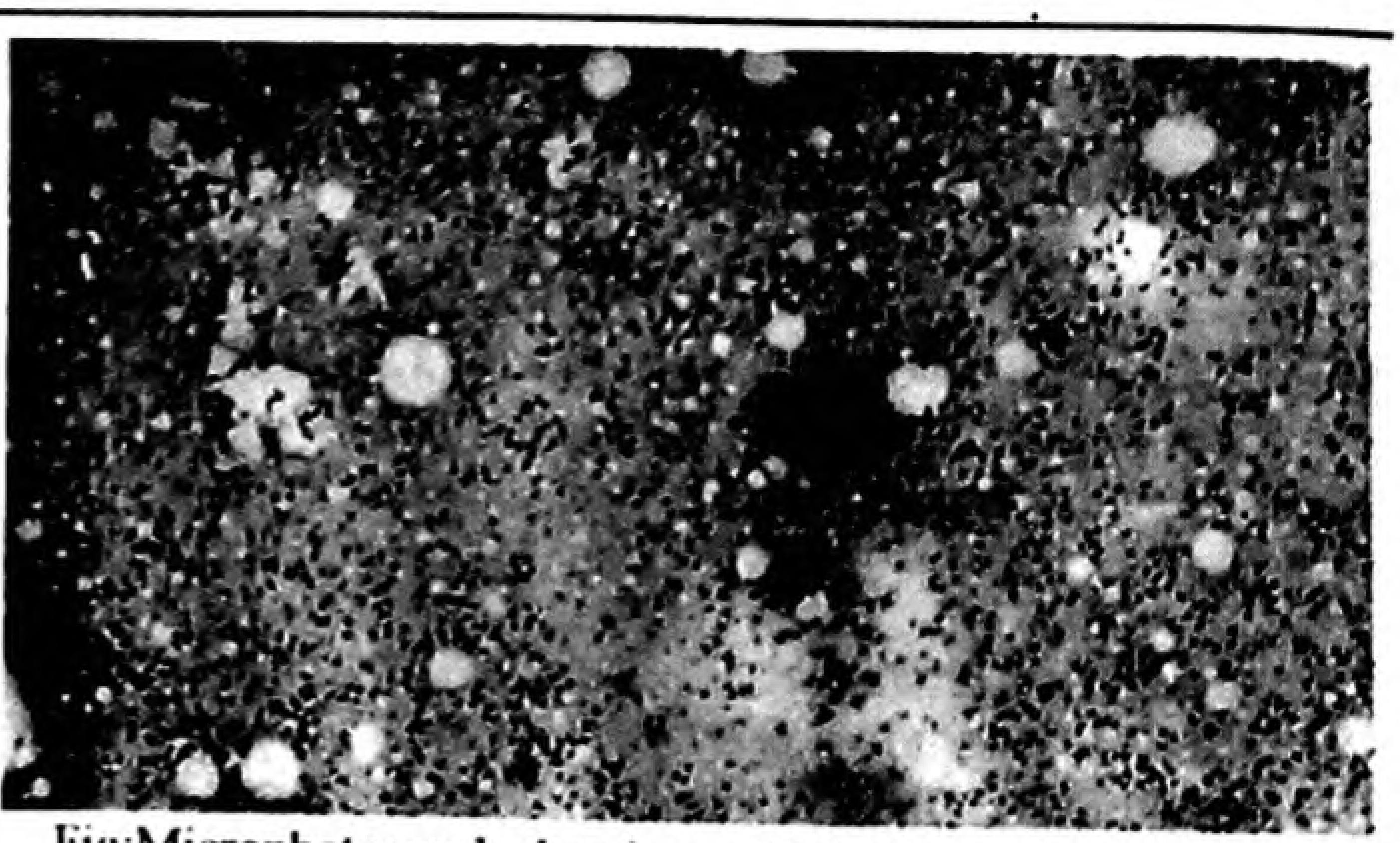

Fig:Microphotograph showing epitheloid granulomas with necrosis.Giemsa Stain 10x10

Table - 2
(Showing main cytomorphological features)

Total No.	Nature of aspirarate	No. of Cases	No. of Cases with epithelioid cell granuloma formation	%age
215	Mixed with blood	90	90	100
	Purulent	73	27	37
	Cheesy	52	44	84.6

It has been observed that epithelioid cell granuloma formation was predominant cytologic feature in smears prepared from aspirate which was mixed with blood, constituting 100% with such finding whereas in purulent aspirate epithelioid cell granuloma, formation was observed in 37% of cases. In cheesy aspirate, cell granulomas were present in 84.6% cases.

Table - 3
AFB positivity and nature of aspirate

Total No. of cases	Nature of aspirate	No. of cases	AFB positivity	%age
215	Mixed with blood	90	21	23.3
	Purulent	73	54	74
	Cheesy	52	34	65.3

It has been observed that AFB positivity was maximum in purulent aspirates (74%), followed by cheesy aspirate (65.3%) whereas in aspirates mixed with blood, the AFB positivity was lowest (23.3%).

- *Maximum AFB positivity (74%) was observed in purulent aspirates where granuloma formation was observed in 37% of such cases only. It was followed by cheesy aspirates where AFB positivity was 65.3% and granuloma formation was in 84% of cases.*
- *AFB positivity was very low (23.3%) in mixed aspirates where granuloma formation was seen in 100% cases.*

Table - 4
Percentage of epithelioid cell granulomas and acid-fast bacilli positivity in 3 different types of aspirates from 215 cases with tuberculous lymphadenitis.

Gross appearnce of aspirate	No. of cases	%	No. of cases showing epithelioid cell granulo-mas (with May-Grunwald Giemsa stain)	%	No. of cases showing acid-fast bacilli posi-tivity (with AFB stain)	%
Mixed with blood	90	41.9	90	100	21	23.3
Purulent	73	34.00	27	37	54	74.0
Cheesy	52	24.1	44	84.6	34	65.3

Table - 5
(Showing validity of cytomorphology & AFB staining in tubercular strains)

Gross appearance of aspirate	No of cases	Gran. +ve cases	Gran. -ve (-) cases	AFB (+) cases	AFB (-) cases	Both gran. & AFB +ve cases	Only Gran. +ve cases	Only AFB -ve cases	Both gran. & AFB -ve cases
Mixed with blood	90	90	nil	21	69	21	69	nil	nil
Purulent	73	27	46	54	19	21	6	33	13
Cheesy	52	44	8	34	18	29	15	5	3
Total No. of cases	215	161 (75%)	54 (25.1%)	109 (50.1%)	106 (49.3%)	71 (33%)	90 (42%)	38 (17%)	16 (7.4%)

Table shown above suggests diagnostic implications for combined cytomorphology and AFB procedures in smears under evaluation.

In 16 cases (7.4% of total cases), there was no evidence of tuberculosis, either on cytomorphology or AFB stain. Final diagnosis was established on histopathology.

DISCUSSION

In the present study, on analysing fine needle aspiration smears from 215 patients with tuberculous lymphadenitis, the highest rate (74%) of AFB positivity was found in cases in which aspirated material was purulent but epithelioid cell granulomas were present in only 37% of these cases. The dominant picture was of necrotic background with viable and degenerating polymorphs. On the other hand, the lowest rate (23.3%) AFB positivity was found in cases in which the aspirate was mixed with blood but smears from all (100%) those cases showed epithelioid cell granulomas. AFB positivity of 65.3% was found in cases with cheesy aspirate and epithelioid cell granulomas were present in 84.6% of those cases.

Present observations are in close agreement with those of Baily[8](1983), Metre[9](1997), Rajwanshi[10] (1987) and Rajhuveer[11](1997), who have also found highest rate of AFB positivity of 47.4%, 66%, 80% and 87% respectively in necrotic material with lowest rate of epithelioid cell granulomas or without epithelioid cell granulomas.

The over-all AFB positivity found by Metre (1987) was 56.4% but in purulent aspirates, it was highest (66%). The over-all AFB positivity observed by Rajwanshi (1987) was 40.6% but in purulent aspirates, it was observed to be highest (80%). Raghuveer (1997) also found highest rate of AFB positivity of 87% in acellular necrotic smears or necrotic material with polymorphous infiltrate from patients of tuberculosis of various sites. In the present study, we have also observed an over-all AFB positivity of 50.1% and highest rate (74%) of AFB positivity was found in purulent aspirates.

Cytodiagnosis of tuberculosis depends on demonstration of epithelioid cells and Langerhan's giant cells in smears[12]. Presence of epithelioid cells is the first step in establishing a diagnosis, while the data on morphological, microbiological and clinical features can be of additional help[13]. Epithelioid cells shave been considered most important for diagnosis of tuberculous lesion. In this study, though epithelioid cells were present in all (100%) cases in which aspirate was mixed with blood, they were present in only 23.3% cases with purulent aspirate. It must be realised that although these cell types are invariable components of tuberculous lesions, their absence does not exclude the possibility of tuberculosis in an inflammatory exudate. In the present study, AFB positivity of 74% was found in cases in which aspirate was purulent but epithelioid cell granulomas were present in only 37% of these cases. While acid fast bacilli positivity was only 23.3% in cases with blood mixed aspirate but showed highest rate of epithelioid cell granulomas (100%).

It is known that for acid fast bacilli to be demonstrated microscopically, their number should be 10,000 to 1,00,000/ml of material[14]. Hence absence of acid fast bacilli in smears showing an otherwise characteristic cytological picture should not weigh against the diagnosis of tuberculosis. This can explain 49% of AFB negative cases which were encountered in the present study. Furthermore, it is known that if multiplication of acid-fast bacilli progresses unchecked, the central portion becomes necrotic and may liquify. The liquified material contains tuberculous bacilli, and if hypersensitivity is high, the exudative reaction, which is composed of polymorphonuclear leukocytes may occur[15,16]. Sometimes these polymorphonuclear cells may immigrate into the caseous tubercles in great numbers[17]. Therefore, using fine needle aspiration technique, one may find only acellular necrotic material or necrotic material with polymorphs in a smear that would show numerous acid fast bacilli by Ziehl Neelsen stain.

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JK-PRACTITIONER

IMPRINT CYTOLOGY VERSUS FROZEN SECTION IN THE INTRAOPERATIVE DIAGNOSIS OF THYROID SWELLINGS

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***Abstract:** The role of imprint cytology (IC) and frozen section (FS) for rapid intraoperative diagnosis of thyroid swellings is evaluated and the two procedures compared. The overall accuracy obtained in both the techniques was 96% with one false negative result in imprint cytology and one false positive result for malignancy in case of frozen section. It is observed that the study of imprints can significantly improve rapid intraoperative diagnosis and can replace more expensive method of frozen section.*

***Key words:** Thyroid, Frozen section, Imprint cytology.*

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Introduction

Frozen section and cytology are two well known intraoperative diagnostic methods with an object of defining therapeutic decision quickly. Frozen section is a well accepted procedure since 19th century. Shaw was responsible for much of pioneer work on this subject[12] Welch[12] is credited with first intraoperative frozen section in 1981 on a patient of breast lump which proved to be benign. The use of imprint cytology was introduced in 1924 by Dudgeon and Patrick. Cytology which includes touch imprint cytology has received much less attention especially in British and American literature[6,7,10,11] Sakar has used this method in thyroid lesions with excellent results.[10]

Imprints cover a wide area of tissue and several imprints can be taken from the tissues to give an excellent cellular morphology as compared to conventional paraffin sections taken from small area.[6,7,10]

Material and Methods

The present study was carried-out on 50 patients admitted with thyroid swellings in the department of General Surgery at Sher-i-Kashmir Institute of Medical Sciences, Srinagar, Kashmir (India) from November 1994 till December 1996. All the fifty patients underwent surgery and the specimen subjected to frozen section study and at the same time touch imprints were taken on clean glass slides from the bisected surface of the tissue. The two methods were evaluated and the results were compared with final paraffin section results.

For every patient a detailed history, clinical examination, routine investigations and specific investigations like thyroid function tests (T3, T4 TSH levels), indirect laryngoscopy, serum calcium level, x-ray soft tissue neck A.P. and lateral views were taken, FNAC was carried out for pre-operative diagnosis.

Following thyroidectomy, the specimen was taken fresh and palpated for any suspicious areas. A portion was cut and taken to FS laboratory. The tissue was subjected to freezing, cutting and mounting in a cryostat (IEC) which was maintained at - 20°C temperature. The sections were taken on glass slides, fixed, washed and stained by haematoxylin eosin staining. For imprint study, the resected specimen was bisected, excessive tissue mopped dry, imprints taken on clean dry glass slides by lightly touching them on to the tissue surface. The slides were air dried, stained with May-Grunwald-Giemsa stain and examined under microscope.

The results of two methods were compared and correlated with those of paraffin sections.

Observations

In our study, F.S. was 100% accurate in diagnosing benign goitres. In case of follicular neoplasia, out of 4 cases of follicular adenoma, FS gave three correct diagnoses (75%) and two cases of folliculr carcinoma were diagnosed correctly 9100%). In case of papillary carcinoma, all the 3 cases were diagnosed correctly but there was one false positive diagnosis of papillary carcinoma. In our series, for frozen section study, overall false negative rate was 2% (one case) and false positive rate for malignancy was 2% (one case) giving an overall accuracy of 96% (Table-I). In case of imprint cytology, all the goitres were diagnosed correctly but there was one false positive result of goitre which proved to be follicular adenoma on paraffin section histopathology. In case of follicular neoplasm, imprint cytology could detect 5 out of 6 cases with one false negative result (6 66%)

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giving an accuracy of 83.34%. In case of papillary carcinoma, all the 3 cases were diagnosed correctly giving an accuracy of 100%. In case of malignant lesions (follicular neoplasia and papillary carcinoma), 88.8% accuracy was found. Overall accuracy of imprint study was 96% with one false negative result (2%) and one false positive result (2%) (Table -II)

Table-I: Results with reference to type of lesion.

Type of lesion	H.P.E. report (No. of cases)	F.S. (No. of cases)	False +ve (%)	False -ve (%)	Accuracy (%)
Goitre	41	41	0	0	100
Folicular adenoma	4	3	0	1(25)	75
Follicular carcinoma	2	2	0	0	100
Papillary carcinoma	3	4	1(33.33)	0	66.67

Table-II: Results with referecne to type of lesion.

Type of lesion	H.P.E. report (No. of cases)	F.S. (No. of cases)	False +ve (%)	False -ve (%)	Accuracy (%)
Goitre	41	42	1(2.43)	0	97.57
Follicular neoplasm	6	5	0	1(6.66)	83.34*
Papillary carcinoma	3	3	0	0	100

Cyto-Diagnosis

The cytologic characteristics obtained are described below.

Colloid Goitre:

The colloid material present was solid, semisolid or fluid of variable colour and consistency. Microscopically occasional clusters of small follicular epithelial cells admixed with colloid were seen. In cystic lesions macrophages were observed next to follicular cells. The diagnosis of colloid goitre in 41 cases was fully correlating with tissue section. One case was confused with follicular neoplasia but the demostration of abundant colloid material clinched the diagnosis.

Follicular Neoplasia:

Since the diagnosis of follicular carcinoma depends on demonstration of capsular and vascular invasion which cannot be seen on cytology, hence the term follicular neoplasia is used. Thus for a reliable differential diagnosis between follicular adenoma and a well-differentiated carcinoma, histological examination is mandatory. The diagnosis was based on abundant cellularity arranged in follicular structures. Single follicle cells and naked nuclei were also scattered throughout the smear. In addition, anisonucleosis was also present, colloid was usually scanty or absent.

Papillary Carcinoma:

The diagnosis was based on finding many papillary structures with crowding of individual cells and the presence of characteristic ground-glass opaque nuclei and intranuclear cytoplasmic inclusions. Another interesting feature is the presence of psammoma bodies.

Discussion:

It is important for the surgeon to have a quick intraoperative information regarding the type of lesion to take a rapid therapeutic decision. Frozen section study is a well known method for intraoperative diagnosis prineered by Shaw[11]. In our series the percentage accuracy of FS in diagnosing bening goitres was 100%. In case of follicular neoplasia, out of 6 cases, 5 were diagnosed correctly giving a percentage accuracy of 83.33% and a false negative rate of 15.8% FS is not always able to differentiate between follicular adenoma and carcinoma as capsular and vascular invasion is not always seen[3,17]. In case of papillary carcinoma, there was one false positive result which proved to be benign on histopathology. Overall accuracy of FS was 96% which is consistent with 95-98% reported by others.[1,2,9]

Intraoperative diagnosis from cells has been known ever since Dudgeon described the technique in 1924[6,7]. The technique although being simple, inexpensive and reliable has not been used widely particularly in America and Britian. Our study showed imprint technique to be a reliable method for intraoperative diagnosis. It could diagnose all the 41 cases of benign goitres correctly but there was one false positive diagnosis which proved to be a follicular carcinoma on final paraffin section. Here the problem was technical, as adequate cellular material was not obtained for accurate cellular morphology. In case of follicular lesions, cytology cannot demonstrate vasular or capsular invasion, so benign and malignant lesions cannot be differentiated. But the presence of follicular structures together with clinical and preoperative correlation can clinch the diagnosis of malignancy in some. Hence the term follicular neoplasia is used. Out of 6 cases of follicular neoplasm, 5 cases were diagnosed correctly giving a percentage accuracy of 83.34%. In case of papillary carcinoma, all the 3 cases were diagnosed correctly giving a percentage accuracy of 100%. We got an accuracy of 97.5% in benign goitres with one false positive result (2.5%) which is consistent with 96% accuracy result of Suen (1978)[13] and 100% by Bose (1993)[3]. The reported percentage accuracy of the technique in various tumours has been 94-100%[8-10]. In our series, out of 9 cases of tumours (follicular neoplasm and papillary carcinoma) 8 were diagnosed correctly including 3 cases of papillary carcinoma giving a percentage accuracy of 88.89% similar to that reported by Bose.[3] Overall percentage accuracy of imprint technique was 96% with one false negative (2%) and one false positive result (2%). Bose obtained an accuracy of 98.3%.

Summary

In this study, overall accuracy for frozen section and imprint cytology was similar i.e. 96%. No false positive result regarding malignancy was obtained in case of imprint cytology but one such result was obtained with frozen section study. In case of follicular neoplasm, both techniques can be faulty in demonstrating vascular and capsular invasion. Imprints give fine cellular details with the demonstration of papillary structures in case of papillary carcinoma.

Hence, we conclude that imprint technique is a simple, inexpensive and yet reliable intraoperative procedure and can replace more expenseive technique of frozen section diagnosis. Although, it cannot distinguish between follicular adenoma and carcinoma because it cannot demonstrate vascular and capsular invasion.

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Ù84-BIOCHEMICAL DERANGEMENTS IN CULTURE POSITIVE NEONATAL SEPSIS AND THEIR IMPACT ON MORTALITY:

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Abstract: *To study the biochemical derangements that occur in sepsis and see their impact on mortality, a study was conducted in the Neonatology section of SKIMS Soura.*

Out of a 100 cases admitted with suspected sepsis, 25 were detected to be culture positive.

Metabolic acidosis was seen in 44% cases with a mortality of 81.8% .

Hypokalemia was seen with a 44% incidence and 36.3% mortality . Hyponatremia was seen in 28% with a mortality of 43%. Hypocalcemia was seen in 32% with a 37.5 % mortality while hypoglycemia had a 20% incidence with 60% mortality.

Metabolic acidosis was seen to have a significant impact on mortality in neonatal sepsis while rest of the electrolyte abnormalities were not found to be of much statistical significance.

Key Words: *Neonatal sepsis , Hypokalemia . Metabolic acidosis , Hypoglycemia .*

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Introduction

Neonates are in a precarious situation with respect to metabolic homeostasis and any insult could lead to derangement the commonest being infection:

Various biochemical changes have been reported in septicemia which include metabolic acidosis , hypoglycemia , hyponatremia, hypernatremia , imbalance in potassium and calcium homeostasis. Metobolic acidosis has most commonly been seen and base deficit was found to be factor associated with fatality in septic neonates in a study conducted by Mathur etal (8).. In mild cases compensation of this acidosis occurs by respiratory alkalosis but the septic neonate being unable to do so lands up in severe acidemia (3), the impact of this being decrease in peripheral vascular resistance leading to hypotension , pulmonary edema & tissue hypoxia . Hypoglycemia (< 40 mg/dl) has been noted during septicemia with gram negative bacilli more frequently than with gram +ve infection (4).

Hyponatremia (< 135 meq/lt.) reported during septicemia probably reflects inappropriate retention of fluid in excess of solute resulting in dilutional hyponatremia (4, 5)

Hypokalemia (< 3.5 meq/lt.) has been seen in sick neonates. It was found to be associated with a significantly increased risk of mortality in a study conducted by S.singh et al .

Hypocalcemia (<7 mg./dl) has been reported in neonates as a complication of sepsis.(7; 10)

Materials & Methods :

Hundred neonates admitted in the neonatology section of SKIMS, Soura with a clinical diagnosis of susspected septicemia over a period of 1 yr. were screened and out of these 25 cases were found to be culture positive which comprised the material for this study.

Klebsella was isolated in 13 cases ; S-aureus & E-coli in 3 cases each ; S.typhi in 5 cases & pseudomonas in one case. Biochemical tests were done on first day and repeated on third and fifth day.

On Culture positive Cases:

Serum sodium and potassium were estimated by flame photometry . Serum calcium was estimated by colorimeter at 400nm. using polymac F microprocessor method . Glucose was estimated by glucose oxidase method using colorimeter at 515 nm. Acid base balance was estimated from arterial blood gas analysis using a blood sample from brachial artery . The test was considered positive when PH blood was < 7.2 on two consecutive occasions The test results were compiled ; compared and observations made.

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Observations:

The observations are given in tabular form as follows:

TEST - ACID BASE BALANCE

S.No	organism	Positive Cases PH<7.2		Negative cases PH>7.2	
		%/No.	Mortality	% / No.	Mortality
1.	Klebsella n=13	46.15% (6)	100% (6)	53.84% (7)	-----
2.	S.aurcus m=3	33.33% (1)	---	66.66% (2)	-----
3.	E-coli n=3	33.33% (1)	100% (1)	66.66% (2)	-----
4.	S.typhi n=5	40% (2)	50% (1)	60% (3)	-----
5.	Pseudomonas n=1	100% (1)	100% (1)	-----	-----
6.	Overall n=25	44% (11)	81.8% (9)	56% (14)	-----

Metabolic acidosis PH < 7.2
Base deficit > 10 mmol /L
Incidence of metabolic acidosis = 44 %
Mortality = 81.8 %
P Value = < 0.05 (significant)

Serum Sodium

S.No	organism	Sodium < 135 meq/L		Sodium > 135meq/L	
		% / No.	Mortality	% / No.	Mortality.
1	Klebsella n=13	30.76% (4)	50% (2)	69.23% (9)	44.44% (4)
2.	S.aureus n=3	33.33% (1)	-----	66.66% (2)	-----
3.	E-coli n=3	33.33% (1)	-----	66.66% (2)	50% (1)
4.	S.typhi	-----	-----	100% (5)	20% (1)
5.	Pseudomonas n=1	100% (1)	100% (1)	-----	-----
6.	Overall n=25	28% (7)	42.85% (3)	72% (18)	33.33% (6)

Serum Sodium < 135 meq / L
Incidence = 28 %
Mortality = 42 8 %
P value = > 0.05 (Not significant)
Serum sodium > 135 meq / L
Incidence = 72 %
Mortality = 33.33 %
P Value = 0.05

Serum Potassium:

SNo.	Organism	Potassium(< 3.5meq/l)		Potassium(>3.5 meq/L)	
		% / No.	Mortality	% /No.	Mortality
1	Klebsella n=13	38.46% (5)	60% (3)	69.53% (8)	37.5% (3)
2.	S.aureus n=3	66.66% (2)	-----	33.33% (1)	-----
3.	E-Coli n=5	0% (4)	----- (1)	100% (1)	33.33%
5.	Pseudomonas n=1	-----	-----	100% (1)	100% (1)
6.	Overall n=25	44% (11)	36.36% (4)	56% (14)	37.71% (5)

Serum Potassium < 3.5 meq/L
Incidence = 44 %
Mortality = 36.36
P value = > 0.05 (not significant)

Serum potassium > 3.5 meq / L
Incidence = 56 %
Mortality = 37.71 %
P value = > 0.05

Serum Sugar

SNo.	Organism	Sugar< 40mg/d		Sugar 40 or > 40 mg/d	
		% / No.	Mortality	% /No.	Mortality
1	Klebsella n=13	30.76% (4)	75% (3)	69.23% (9)	33.33% (3)
2.	S.aureus n=3	33.33% (1)	-----	66.66%	----- (2)
3.	E-Coli n=3	-----	-----	100% (3)	33.33% (1)
4.	S.typhi n=1	-----	-----	100% (5)	20% (1)
5.	Pseudomonas n=1	-----	-----	100% (1)	100% (1)
6.	Overall n=25	20% (5)	60% (3)	80% (20)	30% (6)

Serum sugar < 40mg /dl.
incidence = 20 %
Mortality = 60 %
Pvalue > 0.05 (not significant)
Serum sugar 40 or > 40 mg /dl
Incidence 80 %
Mortality 30 %
PATTEN value > 0.05

Serum Calcium

SNo.	Organism	Sr. Calcium < 7 meq/L		Sr.Calcium > 7 meq/L	
		% / No.	Mortality	% /No.	Mortality
1.	Klebsella n=13	38.46% (5)	40% (2)	61.53% (8)	50% (4)
2.	S.aureus n=3	33.33% (1)	-----	66.66% (2)	-----
3.	E-Coli n=3	-----	-----	100% (3)	33.33% (1)
4.	S.typhi n=5	40% (2)	50% (1)	60% (3)	-----
5.	Pseudomonas n=1	-----	-----	100% (1)	100% (1)
	Overall n=25	32% (8)	37.5% (3)	68% (17)	35.29% (6)

Serum Calcium < 7 meq/L
Incidence = 32 %
Mortality =37 %
P value => 0.05 (not significant)
Serum calcium=7 or > 7 meq/lt
Incidence = 68 %
Mortality = 35.29 %
P value = > 0.05

Discussion:

The impact of infection on neonatal mortality remains high. There is a paucity of literature regarding biochemical profile and its impact on mortality in neonatal sepsis The present study was conducted to study this impact so as to improve the mortality profile of septic newborns.

Many biochemical changes have been reported in septic neonates , like metabolic acidosis , hypoglycemia ,hypocalcemia , hypo & hypernatremia , & hypokalemia we have seen in our study an incidence of metabolic acidosis of 44 % associated with a mortality of 81.8 %. This is in accordance with observations made previously (9) . In individual infections , Klebsella septecemia had metabolic acidosis of 46.15 % with a mortality of 100 % . Metabolic acidosis was seen as a bad prognostic factor in our study and steps to prevent or treat it can improve mortality .

Hypokalemia as a complication in septicemia has been reported with an incidence of 19% and mortality of 25.6% (11).

We found hypokalemia with an incidence of44% with 36.36 % mortality .The highest incidence of hypokalemia was in S.Typhi sepsis (80 %) and highest mortality in hypokalemic Klebsella sepsis (60 %) . Hypokalemia incidence was not statistically significant.

An incidence of 29.8% of Hyponatremia has been reported by many observers (6) . We found a hyponatremic incidence of 28% with mortality of 42 .85 %. We found that hyponatremia does not occur commonly in sepsis but when it occurs is associated with a higher mortality .We .observed a hypoglycemic incidence of 20 % . Hypoglycemia caused more mortality in gram –ve infection (75%).Overall mortality was 60 % .There was 75 % mortality associated with hypoglycemia in Klebsella sepsis and no mortality with hypoglycemia in S.aureus sepsis .We found a hypocalcemic incidence of 32 % with a mortality of 37.5 % .We did not find a significant relationship in mortality between hypo and normo or hypercalcemic group.

This study for the Ist time evaluated the biochemical parameters in relation to the individual infections and the impact on mortality thereof.

It is concluded that among the many biochemical factors responsible for mortality in neonatal sepsis , metabolic acidosis appears to be the prime factor .

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INFLUENCE OF VARIOUS EPIDEMIOLOGICAL CORRELATES ON NUTRITIONAL STATUS OF PREGNANT WOMEN

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Abstract: *A cross sectional study was undertaken on 220 pregnant mothers at ≥36 weeks gestation, attending the Maternal and Child Health unit of Deptt. of Community Medicine for antenatal check up. The study group was selected randomly and socio-demographic background, anthropometric measurements and biochemical estimation were obtained. The selection of cases was restricted to normal mothers (in the age group of 20-30 years with interpregnancy interval of 20 years or more).*

Mothers in the study group had a mean weight of 57.18±6.23 with mean height, abdominal girth and mid arm circumference of 155.05±6.3 cm, 93.45±5.82 and 24.53±2.07 cms respectively. Of various epidemiological factors, parity and place of dwelling did not reveal any significant difference in various anthropometric parameters. However, mean maternal weight was significantly more in mothers above 25 years of age and mean abdominal girth was more in illiterate mothers. Other epidemiological correlates like type of family, working pattern of mothers, per capita income and antenatal care significantly ($p<0.001$) influenced mean maternal weight and abdominal girth values. However, height and MAC were not significantly affected by any of these correlates. Among biochemical factors, maternal Hb had a significant positive impact on weight and abdominal girth (more in mothers with Hb> 10g%) whereas serum albumin had a paradoxical effect on abdominal girth being more in mothers with less serum albumin levels (<3.3 gm/100ml).

While ranking the effect of various socio-medical factors it was observed that maternal age, Hb, per capita income and type of family significantly attributed to weight changes during last trimester. Similarly, literacy, working status, antenatal care and serum albumin significantly attributed to changes in abdominal girth during last trimester. The identification of localy important factors for immediate attention towards improvement of maternal nutrition and thereby perinatal outcome is highlighted.

***Key words:** Anthropoemtric Parameters, Epidemiological, Nutrition*

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Introduction

'Nutrition foundation of India 'reports that 12-25% of women between 20 and 30 years of age in different states of country have heights less than 145 cms and 15-20% have weight less than 38 Kg[1]. Pregnancy in such a chronically malnourished mother results not only in maternal ill-health and complications during pregnancy but also shows its deleterious effects on the growth of foetus. To the malnourished mother it results in increased risk of infection (in pregnancy and puerperium), haemorrhage (antepartum and postpartum), premature labour and toxemia and to the growing foetus maternal undernutrition leads to low birth weight, intrauterine growth retardation (IUGR), increased perinatal, neonatal and infant mortality and morbidity.

In India 25-30% of newborn babies have birth weight less than 2500 gm even though more than half of them are born at term[2]. Almost 50% of foetal growth retardation is due to maternal anemia, undernutrition and small maternal body size[3].

Besides poverty and undernutrition which are the main determinants of disadvantaged state of women, different sociomedical factors like age at child bearning, maternal literacy, place of dwelling, physical activity, social customs and traditional beliefs also have a significant influence on nutritional status of mothers.

Kashmir (valley) with its distinct topography and diverse sociocultural profile shows varying influence of these factors on nutritional status of mother which need to be identified.

Non-availability of data about nutritional status of pregnant mothers and various sociomedical factors influencing it from this part of country prompted us to undertake this study.

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Table I Influence of various social factors on nutritional status mof pregnant mothers

Anthropometric parameters	Working pattern			Per-capita income			Type of family			Literacy status		
	Mild or moderate	Heavy	p	<1000	>1000	p	Nuclear	Joint	p	Literate	Illiterate	p
	n-170 Mean ±SD	n=150 Mean ±SD		n=164 Mean ±SD	n=56 Mean ±SD		n=54 Mean ±SD	n=166 Mean ±SD		n=87 Mean ±SD	n=133 Mean ±SD	
Weight(kgs)	58.20 ±6.89	53.72 ±4.41	<0.001	55.68 ±5.38	61.58 ±5.37	<0.001	59.98 ±6.63	56.27 ±6.06	<.001	57.52 ±6.22	56.96 ±6.23	>.20
Height (cms)	155.29 ±5.51	155.22 ±5.68	>.20	155.06 ±5.03	155.02 ±4.92	>.20	155.27 ±6.18	154.83 ±4.87	>0.20	154.98 ±5.13	155.10 ±4.89	>.20
Mid arm circumference (Cms)	24.58 ±2.32	24.36 ±2.03	>.20	24.58 ±2.08	24.38 ±2.35	>.20	24.32 ±2.19	24.60 ±2.05	>0.20	24.42 ±2.84	24.60 ±2.21	>.20
Abdominal girth (cms)	94.24 ±5.34	90.76 ±3.62	<.001	92.47 ±5.92	96.32 ±6.02	<.001	96.44 ±6.42	92.48 ±6.78	<.001	92.36 ±5.85	94.16 ±5.79	<.05

Material and Methods

The present study has been conducted in Maternal and Child Health unit of Deptt. of Community Medicine, SK Institute of Medical Sciences, Srinagar. A cross sectional sample of 220 mothers at 36 weeks of gestation attending the antenatal clinic was selected randomly by systemic random sampling method. Mothers in the study group belonged to age group of 20-30 years with a parity of 2 or less and having an interpregnancy interval of 2 years or more. Mothers suffering from any chronic illness or complication during pregnancy (like toxemia, antepartum haemorrhage) were not taken up for the study.

Mothers thus selected were enquired for various socio-demographic factors like age, residence, parity, occupational status, type of family and per capita income etc.

Nutritional assessment was done at the time of registration by recording weight, height, midarm circumference and abdominal girth as per the standard methods[1].

Biochemical estimation of hemoglobin by cynmeth hemoglobin method and serum albumin by Bi-uret method was done at the time of registration[5].

Results

Nutritional status of mothers at term showed mean weight of 57.18±6.23 kg, with mean height, abdominal girth and midarm circumference of 155.05±6.3 cm, 93.45±5.82 cm and 24.53±2.07 cm respectively.

Of various epidemiological factors studied, parity (Primi/multigravida) and residential status (rural/urban) did not reveal any significant difference in the mean values of various anthropometric parameters. However, mean maternal weight (57.88±5.28kg) was significantly more in mothers above 25 yrs. of age compared to 56.20±6.02 kg among mothers below 25 yrs. age. Mean abdominal girth of 94.16±5.79 cm was significantly more among illiterate mothers compared to literate ones (92.36±5.85 cm).

Other epidemiological correlates like type of family, working pattern of mother, per-capita income and antenatal care during pregnancy significantly influenced mean maternal weight and abdominal girth values (p<.001) (Table I). However, mean maternal height and mean midarm circumfeence values were insiginificantly affected by any of these correlates.

The hemoglobin level of mothers showed significant impact (p<0.001) on mean maternal weight and mean abdominal girth being 58.96±6.81 kg and 94.26±5.75 cm among mothers with Hb> 10.5 gm% compared to 54.70±6.30 kg and 92.32±5.98 cm among mothers with Hb <10.5 gm%.

Howevern serum albumin revealed significant influence only on mean abdominal girth being paradoxically more in mothers with less S. albumin levels (<3.3 gm/100 ml).

Discussion

Nutritional status of our mothers showed that the mean maternal weight and midarm circumference at term was definitely better than mean weight of 42.2±5.66 kg and MAC of 22.41±1.57 cm as reported by Bhatia et al 91985)[6]. These values were even better than mean weight of 50.85±7.41 kg and MAC of 22.53±2.22 cm reported by Krishna et al[7] and other author[8]. The mean abdominal girth of 93.45±5.82 cms among pregnant mothers was also higher compared to 85.84±10.76 cms reported by Krishna et al[7]. However the mean height (155.05±6.36 cms) of mothers was comparable to 154.60±6.34 cm as

Table II Least significant difference values (LSD) of various anthropometric parameters in relation to epidemiological factors and their rank order

Anthropometric parameters	LSD & Rank order of Epidemiological Parameters Age	Parity	Working pattern	Literacy status	Type of family	Resi-dence	Per capita income	Antenatal care	Hb	Sr. Albumin
Weight	2.1978 (1)	0.5264 (2)	4.3237 (2)	0.6493 (2)	3.9896 (1)	0.2289 (4)	8.4399 (1)	8.111 (2)	4.7112 (1)	0.1601 (3)
Height	0.6118 (3)	0.1105 (4)	0.0780 (4)	0.1740 (4)	0.0169 (1)	0.7444 (1)	0.0661 (4)	0.6912 (4)	1.8329 (3)	0.0731 (4)
Mid arm circumference	0.000 (4)	0.7620 (1)	1.6529 (3)	0.5243 (3)	0.8532 (3)	0.3140 (3)	1.7865 (3)	0.7067 (3)	0.6809 (4)	1.7141 (2)
Abdominal girth	0.6655 (2)	0.2072 (3)	5.3265 (1)	2.2351 (1)	3.7593 (2)	0.6807 (2)	4.5052 (2)	10.6379 (1)	2.4274 (2)	3.1284 (1)

Figures in parenthesis are rank order of anthropometric parameter for each column.

reported by the same author[7].

Thus in comparison to various studies it is evident that our mothers have better nutritional status as assessed by anthropometric measurements at term pregnancy, probably attributable to better pre-pregnancy nutritional status and weight gain which was shown in one of our recent stidies[9].

While studying the influence of various socio-medical factors, it was observed that place of dwelling and parity did not reveal any significant influence on any of the anthropometric parameters. However, maternal literacy, working status of mother, per capita income, type of family and antenatal care revealed a significant influence on maternal weight and abdominal girth in last trimester. Maternal Hb also revealed a significant impact on maternal weight and abdominal girth while serum albumin had a paradoxical effect on abdominal girth. Thus influence was further substantiated by ranking the effects of various sociomedical factors on anthropometric meansurements as per the least significant difference (LSD) (computed as per 't' values (Table II). The ranking confirmed that out of ten epidemiological factors studied, maternal age, Hb, per capita income and type of family significantly attributed to weight changes during last trimester of pregnancy. Similarly literacy, working status, antenatal care and serum albumin attributed to abdominal girth changes in last trimester (Fig.).

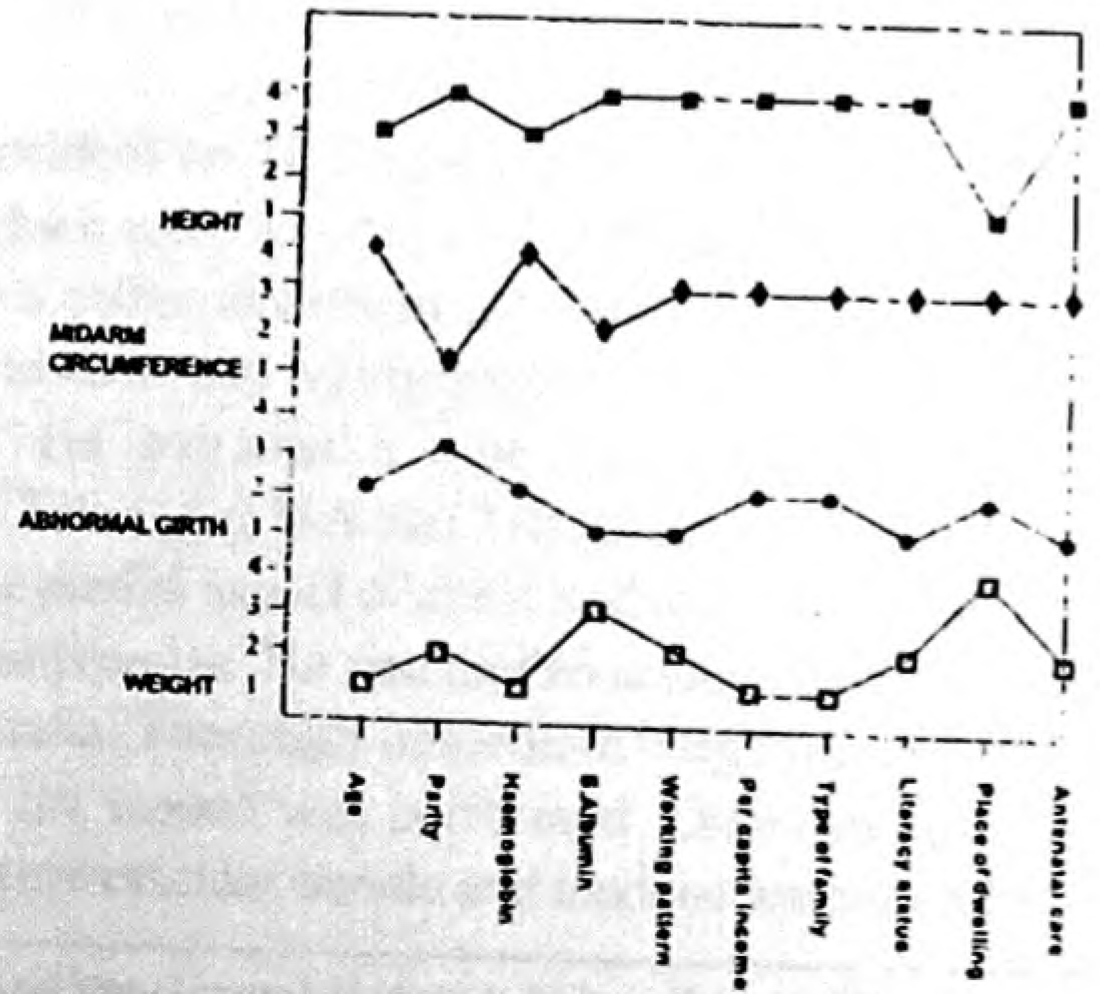

Figure showing the influence of various epidemiological factors on anthropometric parameters

Majority of these biosocial factors may be acting through their influence on food selection, food consumption (both qualitative & quantitative) and care during antenatal period thereby showing a cumulative effect on nutritional status. Importantly most of these factors being maneuverable, the end result of attaining better nutrition of mother in pregnancy can be obtained with proper attention to these factors on priority basis.

The other striking feature of present study is that weight and abdominal girth were shown to be influenced by most of the biosocial factors as compared t the height and MAC of mothers in last trimester. Though there is not ambiguity on "static" nature of height parameter (constant after a particular age), the behaviour of MAC (not being significantly influenced) can be exploited for assessing nutritional status during last trimester and has potential for its future application (significance described earlier)[10]. However, the conclusion needs further substantiation by repeated studies.

The present study thus lays stress on identifying locally prevalent sociomedical factors influencing maternal nuritional status so that area specific need based [illegible] can be formulted for improvement of [illegible] during pregnancy.

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"TOTAL DISLOCATION OF TALUS"

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***Abstract:** A 36 years old man sustained type 3 open total dislocation of talus and was treated with irrigation, debridement of the wound, reduction of dislocation and repair of the deltoid ligament, antibiotics, non-weight bearing cast for 6 weeks, partial weight bearing for further six weeks and physiotherapy.*

This resulted in preserving anatomy, achieving excellent function at 18 months following injury with no radiological evidence of avascular necrosis. The conservative approach with preservation of talus is preferred to aggressive immediate talectomy with or without tibiocalcaneal arthrodesis because the patient is given the benefit of prospect of anatomically and functionally near normal ankle and foot although arthrodesis may be the eventual end point in future.

***Key words:** Avascular Necrosis, Arthrodesis, Dislocation, Talectomy, Tatus.*

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Total dislocation of Talus from all three of its articulations is a devastating injury, and fortunately a rare one. The unique anatomy of the talus, being the only bone without any muscle attachments and with three fifths of the total surface constituting the articular surface, makes it vulnerable to dislocation[1]. The dislocation is invariably the result of high energy trauma, mostly resulting in open injury. Published reports are riddled with diverse views and disagreements regarding mechanism and management.

We are reporting a case of total dislocation of talus, resulting from pronation injury. Reduction and preservation of talus attained excellent functional result with no complications. Our case lends further credence to Watson Jones's[2] conviction that preservation of the talus is the preferred option. Functional results are superior to talectomy even if tibiotalar or pantalar arthrodesis may well be the final end point.

Case report:

A 36- year old man was involved in a road traffic accident on 18 January 1996. He was driving a van in which were also his wife and son. The van was involved in a collision with an oncoming car. He injured his ankle and knee, and was brought to Hereford General Hospital.

He sustained a type 3 open medial total dislocation of Talus (Fig 1-A and 1-B) with a 12 cms. laceration on the medial aspect of ankle and foot with no neurovascular compromise. He also had an undisplaced fracture of right patella. Thorough immediate irrigation and debridement of the wound was performed. Dislocation was reduced. Neurovascular bundle and tendons were found intact. Torn deltoid ligament was repaired and wound closed. About 80 mls of blood with fat globules was aspirated from the right knee joint. Leg was held in POP back slab. Patient was treated with peri-operative and post -operative antibiotics. He had wound inspection and removal of sutures at two weeks when seen in Prince Charles Hospital, Merthyr Tydfil, where he was further followed up. He was allowed to continue mobilisation non-weight bearing in above knee plaster cast. He was allowed partial weight bearing after 6 weeks and at the end of 12 weeks he was fully weight bearing. He was discharged 18 months following the injury with almost full range of movements of knee, ankle and foot. Roentgenograms of ankle showed no evidence of avascular necrosis or osteoarthritis (Fig 1-C and 1-D). Four years after injury the patient did not return with any problem.

Discussion

Total dislocation of talus is an uncommon injury, produced by high energy trauma and usually resulting in an open injury. Hardly a handful of reports have been published in any decade thus far. Until 1975, only 30 cases were reported in English literature[3].

The mechanism of total dislocation of talus is essentially a magnification and continuation of forces causing subtalar dislocation – excessive supination or excessive pronation, the former ultimately producing total lateral talar dislocation, the latter ultimately resulting in total medial dislocation[4]. As described by Leitner[4], first degree supination injury causes medial subtalar dislocation, second degree supination injury produces medial subtalar dislocation with talo crural subluxation

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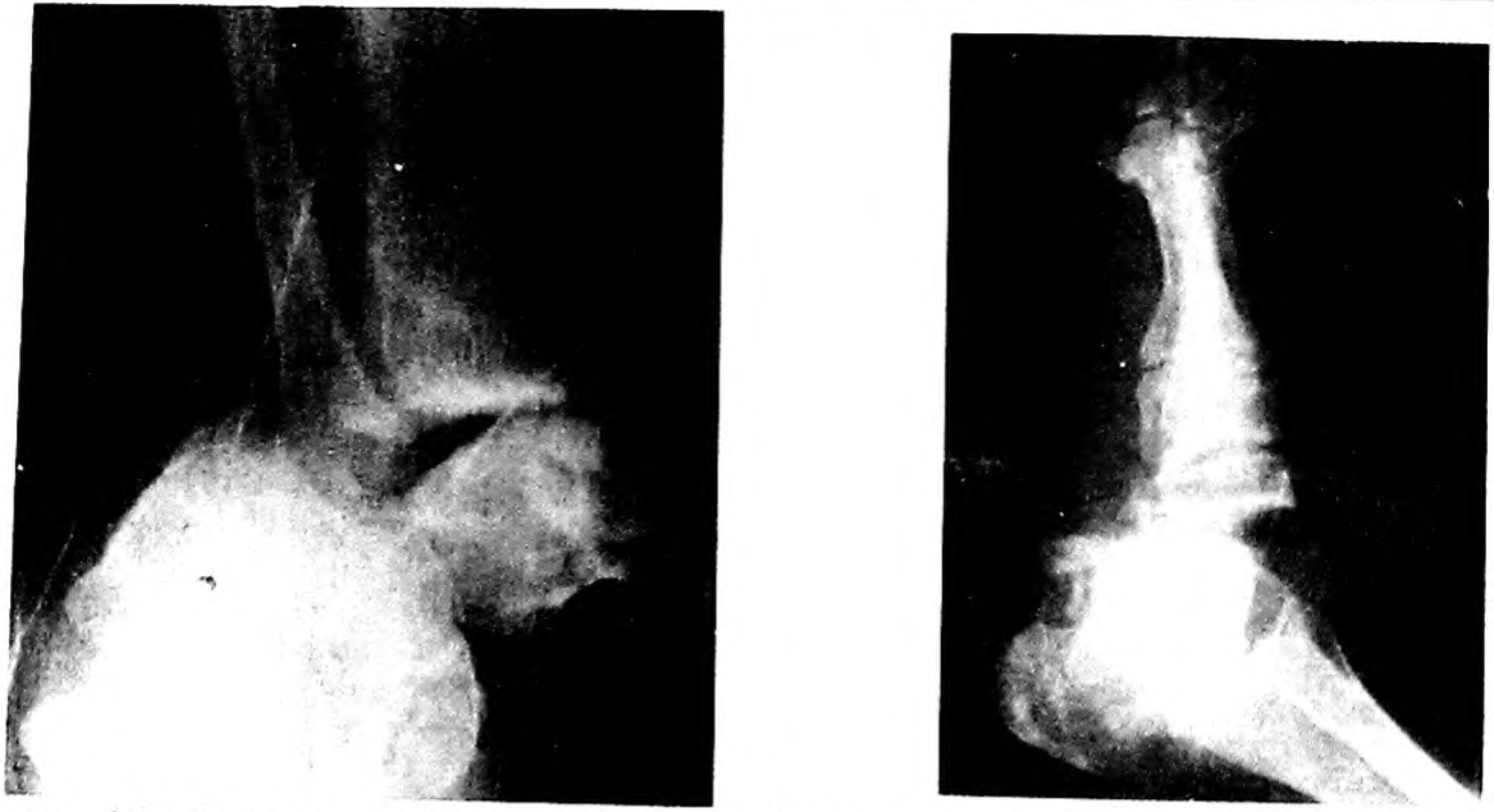

Fig. A and B: Anteroposterior and Lateral Radiographs revealing total dislocated of talus.

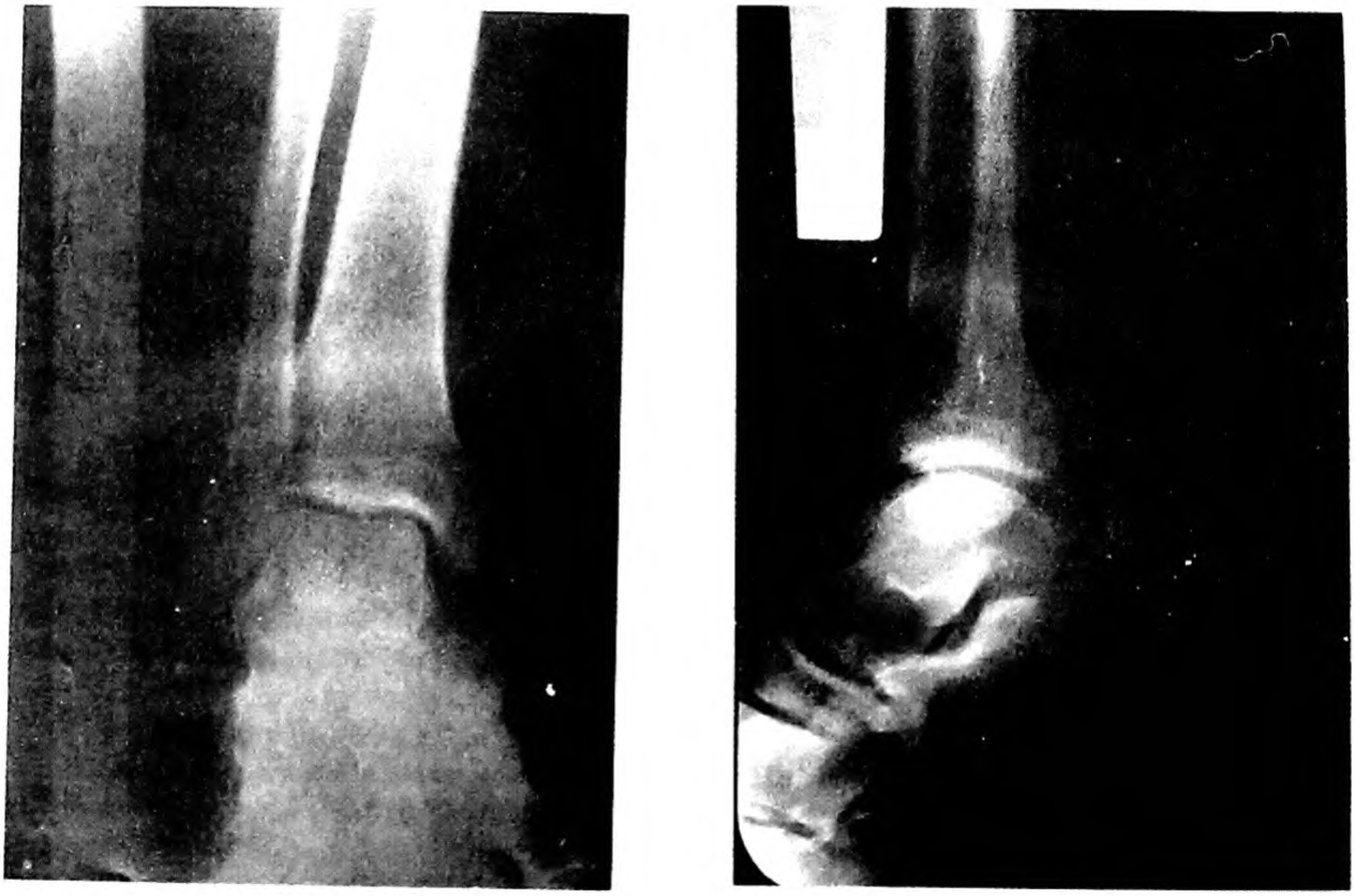

Fig. C and D: Anteroposterior and Lateral Radiographs at 18 months showing namal anule.

and third degree supination injury results in total lateral dislocation of talus. A first degree pronation injury produces lateral subtalar dislocation, second degree pronation injury causes lateral subtalar dislocation in association with talo crural subluxation and third degree pronation injury results in total medial dislocation of talus. The supination mechanism is more common. With pronation mechanism, lateral malleolus is often fractured. Segal et al[5] reported a case of total dislocation of talus which became evident only after stress views. Our case is the result of the rarer pronation injury resulting in total medial dislocation.

Detenbeck and Kelly[1] reported the largest series in literature consisting of 9 cases. They found 89% incidence of permanent infection, all eventually required talectomy. Avascular necrosis is a common complication if infection is avoided. Sudeck's atrophy has been reported following open total dislocation of the talus[6]. Degenerative arthritis of the ankle and subtalar joints is also a frequent late sequel.

As regards the treatment and prognosis, immediate closed or open reduction is mandatory[7]. In open injuries, thorough irrigation, vigorous debridement of the wound and release of skin tension with prompt reduction of dislocation is indicated. Occasionally, even open dislocation may be irreducible by virtue of entrapment by extrinsic tendons of tibialis posterior and flexor digitorum longus [8].

Protagonists of talar preservation [2,9,10,11,12,13,14] favour reduction, preservation of talus and if necessary stabilising with K wire transfixation of the subtalar and talonavicular joints. If avascular necrosis develops, it can be treated in most cases with restriction of weight bearing, achieving good functional results. If infection of talus develops, talectomy with or without tibiocalcaneal arthrodesis can be performed. Degenerative arthritis eventually may require arthrodesis.

Advocates of talectomy[1,15,16] argue that a more aggressive initial approach involving talectomy and primary tibiocalcaneal arthrodesis could avoid the disabling spectrum of infection or avascular necrosis and degenerative arthritis producing prolonged disability for the patient, protracted frustration for the physician and finally culminating in arthrodesis.

In our opinion, reduction and preservation of talus is the preferred option as in our case excellent functional and anatomical result was attained and maintained. Talectomy produces one-inch shortening and tibiocalcaneal arthrodesis is technically demanding and result is neither predictable nor painfree[17].

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DILTIAZEM OVERDOSE - A CASE REPORT

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Abstract: *Calcium channel blockers are widely used to treat a variety of cardiovascular diseases including hypertension. Diltiazem on account of its favorable side effect profile has become well-accepted treatment for angina and hypertension. As its use increases, diltiazem toxicity has been seen with escalating frequency. In this paper we report a case of sustained release diltiazem overdose (6.7 grams,) highlight the clinical features and discuss its management. This ingestion is one of the largest reported in the literature and is remarkable in that the patient recovered without pacing or other extraordinary measures[1].*

Key words: *Calcium Diltiazem, Channel blocker, overdose.*

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Case:

A 50-year-old male ingested twenty-eight 240-mg slow release tablets of diltiazem (6.7 grams) and twenty-eight 25-mg tablets of hydrochrothiazide tablets twelve to fourteen hours prior to presenting to the emergency room. The patient was lethargic but oriented, complaining of nausea and dizziness. Upon arrival to the emergency room he had a blood pressure of 77/43 mmHg, a pulse of 45 /min, temperature of 98.6 F, and a respiratory rate of 20/min. Electrocardiography indicated a junctional rhythm. Laboratory results included hematocrit 35%, platelets199, 000, and white blood cells11,300/mm^3. Serum chemistries showed sodium 140 mEq/l, potassium 3.3 mEq/l, chloride 113 mEq/l, bicarbonate 20 mEq/l, glucose 138 mg/dl, urea nitrogen 26 mg/dl and creatinine 1.8 mg/dl. A urine toxicology screen was positive for cocaine

He was given activated charcoal, Oxygen and fluid resuscitation with normal saline were started. A bolus of 1-g calcium gluconate as 10% solution was given intravenously. His heart rate and blood pressure improved for the next one-hour, but then his heart rate dropped further to 44 beats/min. His blood pressure again fell to 79/39 mmHg. Telemetry revealed sinus bradycardia with second degree heart block. He was given two doses of 0.5-mg atropine intravenously without change in his heart rate or blood pressure. A bolus of 10 mg of glucagon was given intravenously and a continuous infusion of 10 ml (4.65 mEq) calcium glucanote in each liter of normal saline was started at 150 ml/hour. His heart rate and blood pressure improved over several minutes to 52 /min. and 87/45 mmHg, respectively.

He was transferred to the intensive care unit where the infusion of calcium gluconate was continued. Continuous telemetry demonstrated sinus bradycardia and first degree heart block. His heart rate, blood pressure and electrocardiogram recovered to baseline levels over the next 24 hours, with normalization of PR interval. Calcium infusion was stopped and he was observed for another 24 hours with no further episodes of dysrythmia or hypotension and was transferred to the medical floor. Diltiazem serum levels were not obtained.

Discussion:

As an increasingly prescribed drug class, the incidence of accidental and intentional calcium channel blocker overdose has increased from 96 reported cases in 1983 to more than 6000 in 1992-3. The problem is potentially even greater as sustained –release preparations are becoming more popular in use. Routine drug screening does not detect calcium channel blockers, which makes overdoses harder to diagnose.

All calcium channel blockers cause an increase in coronary blood flow and vasodilation of vascular smooth muscle to varying degrees. While they all inhibit transmembrane ion flux through calcium "slow" channels (voltage-sensitive L subtype)[4], their pharmacokinetics, structure, and affinity for specific tissues cause them to have a slightly different cardiovascular effects. Diltiazem has affinity for both conductive tissue and vascular tissue, evidenced by its ability to slow conduction through the AV node and to cause peripheral vasodilation[5-6].

Diltiazem is subject to a large first-pass effect with wide interpatient variability giving no correlation between dosing and plasma levels. While the therapeutic plasma level of diltiazem is 50 to 200 ng/ml, there is also no

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correlation of plasma levels and toxicity making clinical usefulness of plasma level questionable[5-7]. Diltiazem's clearance follows first-order kinetics and hence is independent of the amount ingested. The protein binding of diltiazem is 80% to 90%. Based on these pharmacokinetics profiles, extracorporeal removal procedures would have minimal or no impact on total body diltiazem elimination[7-11]. Delayed toxicity from sustained-release preparations may appear more than 12 hours after the ingestion, hence all patients with sustained release calcium channel blocker overdose should be admitted for observation, even if they are asymptomatic at presentation[12,14].

Clinical features of calcium channel blocker overdose:

The central nervous, cardiovascular, and gastrointestinal systems and glucose metabolism may all be affected. The clinical effects usually develop within 30 to 60 minutes of ingestion of an overdose but is delayed more than 8 to 12 hours in patients overdosing on slow release preparation[12-13]. Central nervous system features include drowsiness, confusion, respiratory arrest and, rarely, seizures or coma. Gastrointestinal features include nausea and vomiting. Interestingly, calcium channel blockers may antagonize calcium channels and inhibit insulin release from pancreatic beta islet cells. There are several reports of significant hyperglycemia associated with calcium channel blocker overdoses and in therapeutic doses[14-21]. Almost all patients developed bradycardia and hypotension with rhythms of first, second and third degree AV block, sinus arrest with junctional rhythm, and asystole. Most signs of the toxicity are resolved within 3 days[1].

Treatment:

The optimum emergent treatment of calcium channel blocker overdose has yet to be defined. Although there are anecdotal reports of improvement by the administration of various agents, good reversal and clinical improvement has not been consistently demonstrated. Treatment of diltiazem overdose consists of pressors and fluid infusions to counteract vasodilation, and chronotropic agents and electrical pacing for bradycardia 22-23. Medications most commonly used include calcium, atropine, dopamine and isoproterenol.

Initial treatment should consist of gastric lavage, if possible within a few hours of ingestion. In patients who have ingested a large dose of sustained release preparation total gut lavage should be considered. Although hypotension may not respond to intravenous infusion of fluid, adequate fluid replacement with normal saline is important.

From a pharmacological standpoint, intravenous calcium would be the most logical agent to use and as expected has been reported to improve conduction abnormalities, cardiac contractility, and hypotension. The optimal calcium dosage that is required for the treatment of calcium blocker toxicity has not been determined. Hypotension may respond to intravenous calcium, however many cases have been reported of patients not responding[9,24-29]. Calcium is given intravenously as 10% calcium chloride at the dose of 0.2 ml/kg over five minutes up to a total dose of 10ml. Calcium gluconate may be used but total dose is increased to 20 to 30 ml. The doses may be repeated every 15 to 30 minutes depending on the clinical response. If more than four doses are required, serum calcium should be monitored[30].

The use of glucagon has revealed mixed success[31-33]. Glucagon is a polypeptide hormone that promotes glycogenolysis and hyperglycemia, but also has chronotropic and inotropic cardiovascular effects. Its postulated mechanism of action is through glucagon-specific receptors on the cell membranes mediated by cAMP. Activation results in alterations of calcium ion fluxes across the cell membrane, totally independent of alpha and beta-adrenergic receptors[31-35].

Various catecholamine and sympathomimetic agents including isoproterenol, dopamine , dobutamine, epinephrine and norepinephrine have been used to counter the hypotensive effects of calcium channel blocker overdose, all with mixed effects. Atropine has been shown to be of no use in calcium channel blocker overdose[36]. Some authors have suggested that patients with hemodynamic compromise from calcium channel blocker overdose that does not respond to initial therapy should receive invasive hemodynamic monitoring 37-39. Specific cardiac output and systemic vascular resistance measurement may suggest the optimal pharmacological therapy and fluid supplementation.

Pulmonary artery catheterization measurements demonstrate good cardiac output and decreased systemic vascular resistance 37-38. Cardiac pacing, when used, has been shown to be very successful and decreased the need for pressor agents. Successful use of intra aortic balloon pump has been reported in diltiazem overdose 40. Intra aortic balloon counterpulsation directly augments cardiac out put in the failing heart. By temporarily providing adequate cardiac output, it provides a window of opportunity for the metabolism and elimination of the offending calcium channel blocker.

Conclusion:

While still relatively rare, diltiazem overdose is being seen more often. If recognized and treated appropriately, it is a survivable overdose even in massive

IrTreatment is mainly supportive, but recognition of diltiazem toxicity and knowledge of its pathophysiology should precipitate the initiation of the specific therapies and treatment modalities mentioned.

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"SURVIVAL IN A CASE OF HYDROPS WITH MEDIASTINAL TERATOMA"

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Abstract: *Case of a newborn baby, who had non-immune hydrops fetalis due to a mediastinal teratoma, is presented because of the favourable outcome due to aggressive management. Born at term gestation with severe hydrops and a massive pericardial effusion, he had a superior mediastinal tumor with major vessel attachements, which was excised and removed.*

Key Words: *Non-immune, Hydrops fetalis, Mediastinal, Teratoma.*

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Introduction:

We describe a rare case of non-immune hydrops fetalis caused by mediastinal teratoma who survived to be discharged after successful surgery. Fetal hydrops is a symptom of serious fetal disease at any stage of gestation. The aetiological mechanisms leading to non-immune hydrops fetalis are complex and their impact variable at different stages of gestation[1]. The natural history of hydrops fetalis remains poorly understood and thus the prognostic factors determining fetal outcome are still unknown.

Case History:

A baby girl was born at Khoula Hospital, Muscat to a 35 year old Gravida 5 Para 4 Omani lady at a gestation of 37 weeks. Antenatal ultrasound had shown evidence of polyhydramnios with fetal ascites and pericardial effusion. There was history of consanguinous marriage and all previous babies were normal. Mother was A positive and her VDRL test was negative. The baby was born by lower segment caesarian section because of bigger size and poor maternal efforts. Apgar scores were 3 & 7 at 1 and 5 minutes respectively after adequate resuscitation. Baby weighed 4.3 kilograms at birth and was admitted to the special care baby unit and connected to a ventilator.

Physical examination revealed no obvious congenital anomalies. Cord was normal and healthy. Patient needed ventilatory support with pressures of 35/4 cm. of water, rate of 60 per minute and Fio 1.0.

There was massive ascites and 140 ml of fluid was withdrawn by abdominal paracentesis and 45ml of hemorrhagic pericardial fluid was aspirated to relieve cardiac tamponade. Initial investigations revealed a normal full blood count, O-Negative blood group and direct coomb's test was also negative. Glucose -6-phosophate dehydrogenase screening was normal. Coagulation profile and urine examinations were normal.

X-ray chest revealed cardiomegaly with left sided mass in the chest. CT scan of the chest showed a very big central to left-sided mass with multiple cystic areas in it (Fig.1) and a huge pericardial effusion and lungs were compressed with clear fields. There was marked ascites in abdomen. Initial opinion was that the mass was a germ cell tumor or lymphoma.

Other pre-operative investigtions were as follows:

Serum Lactate Dehydrogenase: 808 U/L (Normal 266-500)

Serum ferritin : 196 micrograms /L (Normal 7-282)

Serum Alpha fetoproteins: 56,020 micrograms/L (Normal <15)

Chorionic Gonadotropin (Beta hCG): 2IU/L

T CT guided biopsy was inconclusive.

Thoracotomy was performed on the 10th day of hospitalisation. A large soft superior mediastinal tumor was seen infiltrating the pericardium. It was also attached to the superior vena cava and was encroaching upon the aorta and the pulmonary artery. The tumor was excised with great difficulty. On 16th post-operative day pilcation of the left diaphragm was done because of diaphragmatic paralysis. Post-operative serum Alpha fetoprotein levels decreased to 17595 micrograms/L and subsequently to 336 micrograms/L. The baby was discharged after 45 days of hospitalization.

Pathological examination revealed a nodular fleshy, dark brown mass measuring 8x65x40 mm. On cutting, it

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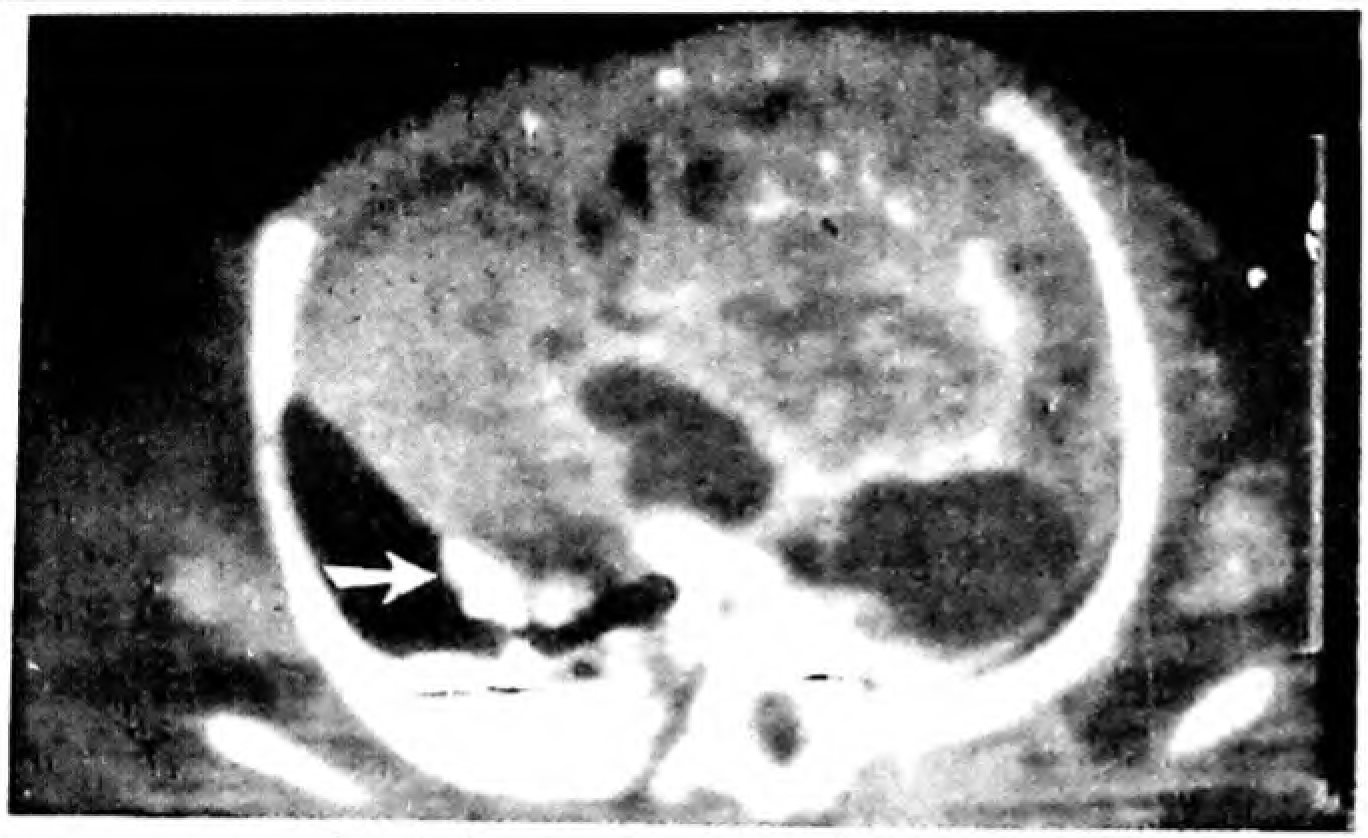

Fig 1: Contrast Enhanced CT
Large mediastinal mass,partly enhancing partly cystic.Superior Vena Cava is displaced posteriorly (Arrow)

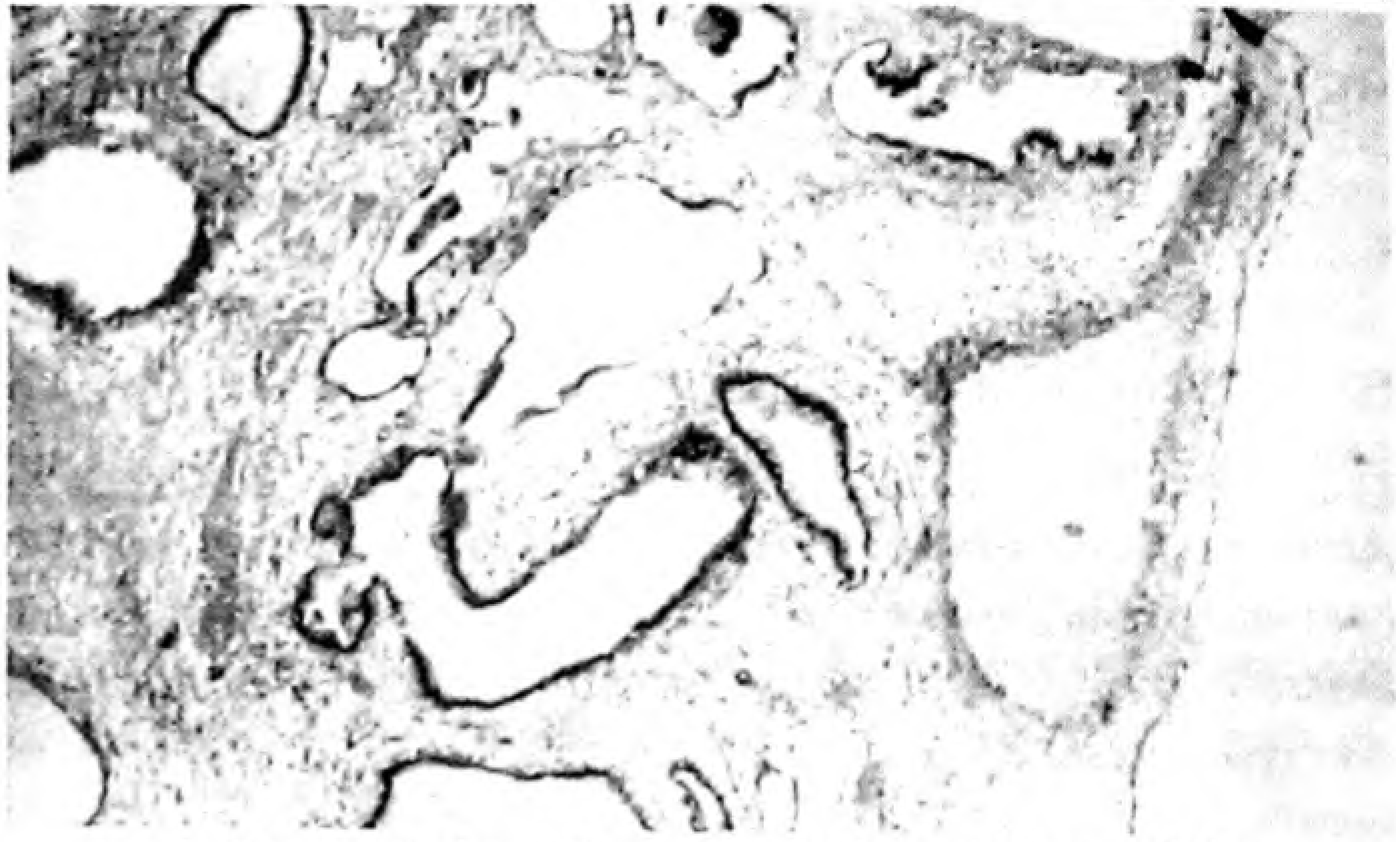

Fig 2. Histopathology shows Mucin-Screating grandular Structures,an island of cartilage,glial tissue and smooth muscle (X 200)

showed spongy cystic areas filled with clear fluid. Microscopy revealed a teratoma composed predominantly of mature elements mainly respiratory - type epithelium admixed with neuroglial tissue, smooth muscle, gastrointestinal epithelium, squamous epithelium and islands of cartilage (Fig. 2). In some sections, foci of immature tissues (neuroepithelium and mesenchyme) were identified. No components of endoderml sinus tumor or embryonal carcinoma were seen. The diagnosis was of "immature teratoma, grade 2 (Norris).

Discussion:

Mediastinal teratomas are uncommon and rarely result in non immune hydrops[2] The pathogenesis of non-immune hydrops caused by mediastinal teratomas is not clearly understood, but obstruction of venous return caused by the tumor can be a possibility leading to hydrops. Few case reports of non-immune hydrops caused by mediastinal tertoma have earlier been described[2,3].

The differential diagnosis of non-immune hydrops is large and pathophysiologically diverse. The disorder occurs in 1 in 3000 pregnancies. Known causes of non-immune hydrops include cardiovascular abnormalities, chromosomal abnormalities, haematological disorders, fetal abnormalities, twin to twin transfusion syndrome, congenital infections, skeletal dysplasias, fetal tumors, placental abnormalities and genetic metabolic disorders[1]. About 40% cases are due to cardiac abnormalities, 10-15% result from chromosomal abnormalities and about 10% from hematological disorders[1]. Congenital defects of the chest and abdomen can also be associated with non-immune hydrops. These chest abnormalities include congenital cystic adenomatoid malformations of the lungs, diaphragmatic hernias and extralobar pulmonary sequestration[4,5]. Teratomas and neuroblastomas are the fetal tumors most commonly associated with non immune hydrops. Non-immune hydrops develops in about one-third cases of fetal teratoma, presumably because of high output cardiac failure[6].

There have been case reports earlier of non-immune hydrops fetalis caused by mediastinal teratoma by Kuller JA et al[2] and Weinraub Z et al[3]. These cases had died and mediastinal teratoma was confirmed by postmortem examination in one case. The present case fortunately survived due to aggressive and timely management and successful surgery and was discharged after 45 days of hospitalization, raising hopes of a successful intervention and management in a case of non-immune hydrops fetalis caused by a mediastinal teratoma. Obstruction of the venous return was the most likely aetiological possibility of hydrops in this case and future follow up of this patient could tell us about the survival beyond infancy or the recurrence of the tumor. Alpha feto-proteins have a good diagnostic and prognostic value in cases of embryonic tumors, as is evident from this case and this patient is under constant follow up and further developments may be of interest in the future.

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JK-PRACTITIONER

METAPLASTIC BRENNER'S TUMOUR WITH STROMAL CALCIFICATION

Azra Shah M.D., F.I.C; Parveen Shah

***Abstract:** A case of metaplastic Brenner tumour with foval stromal calcification occuring in a fifty-five year old female is described. The tumour measured 20x15x8 cms and weighed 1000 gms. Microscopic examination revealed a metaplastic Brenner tumour. Large areas of stromal calcification were present.*

***Key words:** Brenner tumour, stromal calcification, metaplastic change.*

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Introduction:

Brenner's tumour is an uncommon tumour, which arises from the surface epithelium of the ovary[1]. It constitutes 1 to 2% of all ovarian neoplasms in Western literature[2,3] and less than one percent in our country[4-7]. The average age of presentation is 50 years. Metaplastic Brenner tumour was the term coined by Roth et al[8] to describe a microscopic pattern where the cystic formation within a Brenner's tumour is unduly prominent and accompanied by mucinous change. This type of Brenner tumour follows a benign clinical course.

We describe herein a case of metaplastic Brenner tumour with marked stromal calcification. On reviewing the literature, we did not come across any other report describing calcification within a Brenner tumour. Hence this led us to publish this case.

Case Report:

A 55 year old postmenopausal lady presented to hospital with progressively increasing swelling of the abdomen for one and ahalf years and abdominal pain of one years duration. Abdominal examination revealed a mass 15x10cm in the hypogastrium and right iliac fossa. The mass was not moving with respiration, its surface was irregular and firm in consistency.

Routine lab investigations were normal except a hemoglobin level of 9.1gms per cent. X-ray chest was normal. Abdominal ultrasonography revealed normal liver, gall bladder and kidneys. There was a hyperechoic mass in the pelvis, which was reported as right ovarian mass.

The patient underwent laparatomy and a right ovarian tumour was removed. The specimen was sent for histopathological examination.

Gross Examination:

The specimen received measured 20x15x8cms and weighed about 1000 gm. It was yellowish white in colour with variable consistency being cystic in some places and hard in other places. On slicing the tumour was well circumscribed with small cystic areas filled with a viscous yellowish - brown opaque fluid.

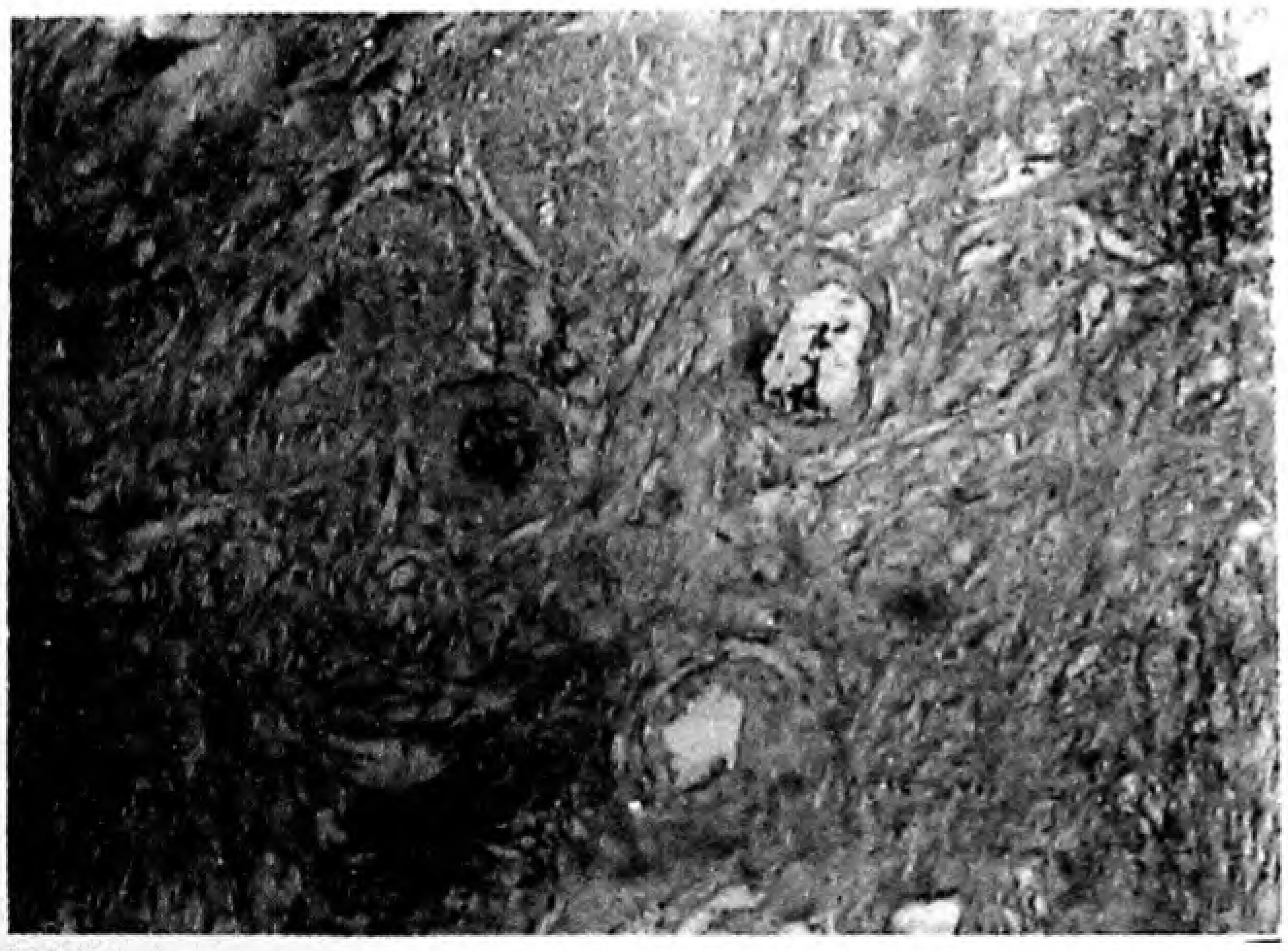

Fig. 1: Photomicrograph showing nests of epithelial cells with cystic changes. Note the mucinous material within cystic cavities (HxEx400)

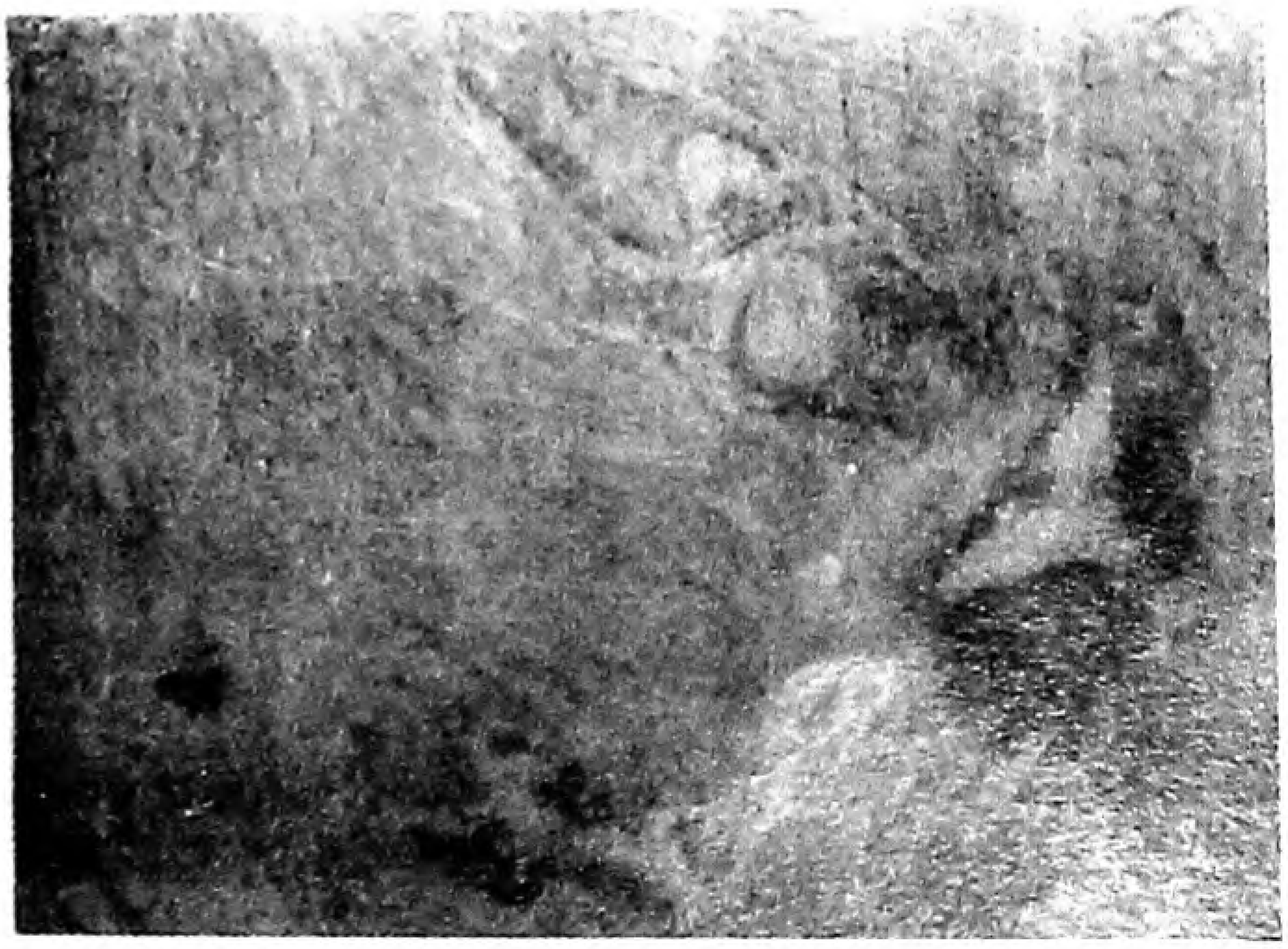

Fig. 2: Photomicrograph showing dense fibrous Stroma and areas of coarse Calcification (HxEx400)

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Microscopic Examination:

The tumour showed a typical picture of Brenner tumor consisting of solid nests of epithelial cells resembling transitional epthelium. In addition many nests showed cystic change and some of the cystic cavities contained mucinous material (Fig.1). The epithelial cells were sharply defined with oval nuclei, small distinct nucleoli and longitudinal grooves (coffee bean nuclei). The cell groups were surrounded by abundant fibrous stroma. Large masses of coarse calcification were scattered throughout the tumour (Fig.2).

Discussion:

Brenner tumour is an uncommon neoplasm of surface epithelium of the ovary constituting 1-2% of all ovarian neoplasms in Western literature[2,3] and less than 1% of all ovarian neoplasms in India[4-7]. The pathologic hallmark is the solid and cystic nests of epithelial cells resembling transitional epithelium and the 'coffee-bean' nuclei which were seen in our case. In addition, we had two unusual features. Metaplastic and stromal calcification scattered throughout the tumour. Metaplastic change has been defined by Roth et al[8] as a typical microscopic feature of unduly prominent cyst formation accompanied by mucinous change. Scanning the literature we did not come across any case report describing calcification within a Brenner tumour.

The metaplastic type of tumour follows a benign clinical course after oophorectomy. Although the hitogenesis of Brenner tumour remains controversial, most authors favour an origin from surface epithelium or the cysts derived from them, through a process of transitional cell metaplasia[10].

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GENE THERAPY - REVOLUTIONIZING MODERN MEDICINE

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The first clinical trials for gene therapy to combat diseases were carried out in early 90's. Since last few years clinical protocols have been approved world wide and over 2500 patients have carried genetically engineered cells in their body which has allowed us to reach a conclusion that gene therapy has a broad potential to treat a wide array of human dieases. Conceptually, the technique involves identifying appropriate DNA sequences and cell types, then developing suitable ways to get enough of the DNA into these cells. The therapeutic prospects range from tackling genetic diseases and slowing down progression of tumors, to fighting viral infections and putting a check on neuro-degenerative diseases. However there is a longway to go in improving the gene delivery systems, expression levels and working on host immune responses. Presently gene therapy is being contemplated only on somatic, mostly, non-reproductive cells. There are a number of somatic tissues that can receive therapeutic DNA, the choice of cell usually depends on the nature of the disease. For example, to correct obesity, caused by the defective leptin gene, leptin administration directly into the cerebrospinal fluid is very effective. Also for example, to correct blood-clotting disorders such as hemophilia, caused by the blood clotting protein called factor IX, deficiency all that is needed is a therapeutic level of clotting protein in the plasma. This protein may be supplied by muscle or liver cells, fibroblasts, or even blood cells. The choice of tissue in which to express the therapeutic protein depends on considerations such as the efficiency of gene delivery, protein modifications, immunological status and accessibility. Another consideration is the amount of therapeutic protein that should be delivered. A majority of people have around 5ug of factor IX per ml of plasma, so the appropriate amount of cells producing the protein need to be delivered to correct hemophilia. In some brain disorders, for example, the gene transfer to a few hundred cells could be considerably helpful to the patients.

To summarize, the following are the categories of somatic cell gene therapy. The first ex vivo, where cells are removed from the body, incubated with a vector containing the gene of interest cloned into it, and return of the gene-engineered cells to the body. This procedure is usually done with blood cells because they are the easiest to remove and return. The second is in situ, where the engineered vector is placed directly into the affected tissues. Examples are the infusion of adenoviral vactors into the trachea and bronchi of patients with cystic fibrosis, the injection of a tumour mass with a vector carrying the gene for a cytokine or a toxin, or the injection of a vector carrying a dystrophin gene directly into the muscle of a patient with muscular dystrophy. The third is in vivo, where a vector could be injected directly into the blood-stream. There are no clinical examples of this third category as yet, but if gene therapy is to fulfill its promise as a therapeutic option, in vivo injectable vectors must be developed.

Two categories of gene delivery carriers into the patients have been used so far. The first comprises the non-viral vectors, ranging from direct injection of DNA to mixing the DNA with poly-lysine or cationic lipids that allow the gene to cross the cell mennbrane. A number of reagents have been developed that increase the efficiency of delivery into the cells. Most of the current gene-therapy approaches make use of the second category, the viral vectors.

Viral Vectors

The human body has spent many thousands of years learning to protect itself from the onslaught of environmental harzards, including the incorporation of foreign DNA into its genome. Viruses, however, have been partially successful in overcoming these barriers and being able to insert their genetic material into human cells. Hence the initial efforts at gene therapy have been directed towards engineering viruses so that they could be used as vectors to carry therapeutic genes into patients. Importantly, the viruses used for gene therapy have all been disabled of any pathogenic effects. The use of viruses is a powerful technique, because many of them have evolved a specific machinery to deliver DNA to cells.

As viruses offer a big potential for gene therapy, going into the broader details of different kinds of viruses that can be used is the crux of the present day research on gene therapy. The different kinds of viruses that are used vary from a range of RNA viruses to DNA viruses.

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Table - 1

Disease	Defect	Incidence	Target cells
Genetic			
Severe combined immunodeficiency (SCID/ADA)	Adenosine deaminase (ADA) in ~25 of SCID patients	Rare	Bone marrow cells or T-lymphocytes
Haemophila A	Factor VII deficiency	1:10000 males	Liver, muscle, fibroblasts or bone marrow cells
B	Factor IX deficiency	1:30000 males	
Familial hypercholestrolaemia	Deficiency of low density lipoprotein (LDL) receptor	1:1 million	Liver
Cystic fibrosis	Faulty transport of salt in Lung epithelium Loss of CFTR gene	1:3000 caucasians	Airways in the lungs
Haemoglobinopathies thaalassaemias/	Structural defects in a or b-globin gene	1:600 in certain ethnic groups	Bone marrow cells giving rise to red blood cells
Gauchers disease	Defect in the enzyme glucocerebrosidase	1:450 in Ashkenazi jews	Bone marrow cells, macrophages
Acquired			
Cancer	Many causes including genetic and environmental	1 million/year in USA	Variety of cancer cell types
Neurological diseases	Spinal cord injury Parkinson's and Alzheimer's	———	Direct injection in the brain, neurons and glial cells.
Cardiovascular	Restinosis arteriosclerosis	———	Arteries, vascular endothelial cells.
Infectios diseases	AIDS, hepatitis B	Increasing numbers	T cells, livers

Retroviruses are a group of viruses whose RNA genome is converted to DNA in the infected cell. The genome comprises three genes termed gag, pol and env, which are flanked by elements called long terminal repeats (LTRs), required for integration into he host genome, also serve as enhancer -promoter sequences. The final element of the genome, called the packaging sequence, allows the viral RNA to be distinguished from other RNAs in the cell. By manipulating the viral genome, viral genes are replaced with transgenes such as the gene for factor IX (Table 1). The chimeric genome is then introduced into a packaging cell, which produces all of the viral proteins, but these have been separated from the LTRs and the packaging sequence. So, only the chimeric viral genomes are assembled to generate a retroviral vector. The culture medium in which these packaging cells have been grown is then applied to the target cells, resulting in transfer of the transgene. Typically, a million target cells on a culture dish can be infected with one milli litre of the viral soup. So, when possible, the cells from the target tissue are removed, grown in vitro, and infected with the recombinant retroviral vector. The target cells producing the foreign protein are then trans-planted back into the organism. This procedure has been termed 'ex vivo gene therapy'.

Lentiviruses also belong to the retrovirus family, but they can infect both dividing and non-dividing cells. The best-known lentivirus is the human immunodeficiency virus (HIV), which has been disabled and developed as a vector for in vivo gene delivery. These vectors can be produced-albeit on a small scale at the moment at concentrations of >10° virus particles per ml. When lentivirus vectors are injected into rodent brain, liver, muscle, eye of pancreatic-islet cells, they give sustained expression for over six months, the longest time tested so far.

The DNA based vectors most likely used for the gene transfer are the adenovirus vectors and the adeno associated vectors (AAV). Adenovirus vectors have some positive attributes, they are human viruses able to transduce a large number of different human cells types, they have a large genome and can potentially hold large DNA inserts (upto around 30 kb). These viruses usually don't integrate into the host DNA but are replicated as episomal elements in the nucleus of the host cell. So adenoviral vectors are extremely useful if expression of the transgene is required for short periods of time. One promising approach is to deliver large numbers of adenoviral vectors containing genes for enzymes that can activate cell killing, or immunomodulatory genes, to cancer cells. A relative newcomer to the field is AAV. The virus can infect a variety of cell types, and the viral DNA can integrate preferentially into human chromosome 19. AAV vectors containing human factor IX complementary DNA have been used to infect liver and muscle cells in immunocompetent mice. The mice produced therapeutic amounts of factor IX protein in their blood for over six months confirming the promise of AAV as an in vivo genetherapy vector.

Other vectors

Among the other viruses being considered and developed, is herpes simplex virus, which infects cells of the nervous system. In addition the large transgene capacity of this virus is bringing it on the forefront of gene therapy research in the CNS. Vaccinia-virus-based vectors have also been explored, largely for generating vaccines. Th Sindbis and Semliki Forest virusis being exploited as a possible cytoplasmic vector which does not integrate in to the nucleus. Although most of these systems produce the foreign protein only transiently, they add diversity to the available systems of gene transfer.

Clinical trials

In recent years a number of clinical trials have been launched. About 30 of them involve the correction of monogenic diseases (Table 1) such as cystic fibrosis, severe combined immunodeficiency (SCID). Only one phase III and several phase II clinical trials are now underway, all the rest of the approved gene therapy clinical protocols are for smaller phase I/II trials. The phase III clinical trials are being carried out on glioblastoma multiformi. The rationale is to insert a gene capable of directing cell killing into the tumor while protecting the normal brain cells. The therapeutic transgene, viral HSV-thymidine kinase gene (HsTk) is cloned into a retroviral vector. The actual material injected into the residual tumor and peritumor areas following tumor resection, is a mouse producer cell line which generates retroviral particles carrying the retroviral vector with the Hs Tk gene. After a week, the patient is treated with a drug, ganciclovir. The tumor cells which have been transduced with the vector containing the Hs Tk gene will phosphorylate ganciclovir, the ganciclovir triphosphate then blocks the DNA synthesis machinery and kills the cells.

Many of the phase II trials are underway testing gene-therapy vectors as vaccines either against cancer or against AIDS. The vector containing the gene for the HLA-B7/B2-microglobulin protein is being currently used in phase II trials. One trial is for metastatic malignant melanoma and the other for head and neck squamous cell carcinoma. The basic concept behind the HLA-therapy is that the HLA gene (such as B7) which is not expressed in a tumor, is injected into the tumor mass and that the expression of this foreign antigen should stimulate the immune system to react against the cancer. The phase II trial of about 200 patients over 2 years in which the retroviral vector encoding the env and rev gene segments of HIV-I (IIIB) strain is injected intramuscularly to induce augmented anti-HIV cytotoxic T-cell responses as a treatment for AIDS.

Ongoing discoveries of the cellular, molecular and genetic basis of various disorders and continued advancements in gene transfer technology, have contributed to the development of therapies for these disorders. These therapies can relieve symptoms, and slow or halt the progression of the disease. Advances in the genetic makeup of vectors and strategic means of delivery have provided selective and global delivery modalities, with some limitations. Since each disease has special features, the choice of vectors and routes of delivery will need to be tailored accordingly. Continued communication between the scientists and the clinicians is necessary to ensure the proper direction and evaluation of these studies towards therapeutic use. Despite the limiations, gene therapy will almost certainly revolutionized the practice of medicine in coming years.

HAJ AND HEALTH

Latif Ahmad Khan MD, MRCP (UK); Sarosh Ahmad Khan M.D.

Haj is the annual congregational prayer of Muslims. It is the fifth pillar of Islam and is obligatory for all Muslims once in a lifetime provided he or she is in a sound physicial and mental health and can afford it. Haj proper starts on the 8th of the Zhul Hijjah, which is the 12th month of the lunar calendar. It finishes on the 13th of the same month. However hajis (pilgrims who come to perform Haj), reach the holy city of Makkah weeks in advance and continue to stay there for weeks later. Some of them move to the city of Medina for visiting the Prophet's mosque. Haj is unique in the sense that it has been going on for more than 1400 years on a regular basis and around 2-3 millon people perform this pilgrimage every year. Haj involves circumambulation of the holy Kaaba seven times, walking between the hills of Safa and Marwa seven times, stay in the valley of Mina on the 8th day and nigh, moving to Arfat on 9th and coming back after sunset to Muzdalifah. After spending the night under the open sky in Muzdalifah, hajis move to the base camp in Mina on the 10th. There they stay till 12th or 13th Zhul Hijjah. Physical exertion is quite common and therefore good health of hajis is so important. The various health problems encountered during Haj are due to the following reasons:

1. Most of the hajis are elderly. They have been saving their lifetime earnings for this occasion.
2. Many of them have chronic diseases like diabetes, hypertension, coronary artery disease, chronic bronchitis, osteoarthritis, osteoporosis etc.
3. Hajis come from different countries and speak different languages and linguistic barrier is expected. they have different socioeconomic and health care standards back hom and have no idea of the facilities available in the Kingdom.
4. Most of the hajis do not seek early medical advice and many leave the hospitals prematurely in order not to miss a vital ritual.
5. The climate of Mecca is hot and many find it difficult to adjust in a short period of time.

Quite a number of studies have been conducted in the past on different health problems in hajis. This includes sunstroke[1], cholera[2], meningococcal meningitis[3] and other surgical[4] and medical[4] disorders.

During Haj dehydration is common among hajis. This is because of many reasons including the hot weather, moderate to severe exertion, less intake of water and juices and the common occurrence of respiratory tract infection with fever. Heat exhaustion and heat stroke are becoming less common because Haj has been falling in the relatively cooler months in the last few years. Gastroenteritis has also become less frequent due to improved sanitation and with the availability of clean bottled drinking water (many times free). Gastroenteritis being the cause of admission in 76% of patients in 1988 has gone down to a low 5.3% in 1995[5,6]. We have noted a special pattern of sunburn in hajis. This occurs on the head and neck, the right arm, the right chest and the face as these areas are not covered by AHRAM especially during circumambulation of KAABA: In addition due to friction many hajis have skin peeling on the medias aspects of the thighs and the perineal region. Preventive measures as the use of white umbrellas, sunscreens and some antibiotic cream have proved helpful.

However the major cause of morbidity in pilgrims both during and after Haj is respiratory tract infection which is mainly viral with superadded bacterial infection in some cases. From being the cause of hospital admission in 1.2% patients in 1988, respiratory infections have shot up as the cause of admission in 45.8% in 1995[5,6]. This remains the main cause of death especially in the elderly and in those with underlying chronic cardiorespiratory disorders. We have seen quite a number of cases with respiratory failure particularly in hajis from south East Asian countries. These patients have thick purulent secretions in their throats and they respond dramatically to endotracheal intubation and suction. With liberal intravenous fluids, oxygen and antibiotics they improve within a few days. Most of the times they do not require ventilatory support and tolerate the endotracheal tube well. However what is probably more important is the mini-epidemic of viral infection which is seen after Haj is over. It keeps many hospitals throughout the Kingdom busy when Saudi pilgrims return to their respective homes. It can be assumed that when the hajis return to their countries they might be carrying along with them the contagious disease. Vaccination against influenza should be considered in elderly hajjis with cardioespiratory

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diseases. Other important diseases contributing to morbidity and mortality are coronary artery disease, hypertension, diabetes mellitus and their complications.

Recommendations: We have an extensive experience of dealing with the medical problems during Haj, having worked in almost all-major hospitals of Mecca, Mina and Arafat. We recommend that all pilgrims should have a medical check up by a doctor in their respective countries before coming for Haj. At least they should be screened for anemia, respiratory diseases, ischemic heart disease, diabetes and renal failure. This means every haji should have a CBC, ECG, chest x-ray, FBS and renal function tests before Haj. Each of the haji should carry the medical fitness card or his on her person all the time. This should mention the diseases he has and the treatment if any. We found this mostly in hajis from Turkey who carry all this relevant medical information in the locket worn around their neck. All hajis should receive vaccination for meningococcal meningitis before pilgrimage. High-risk cases and the elderly should receive polyvalent pneumococcal vaccination, which offers 50-80% protection against invasive pneumococcal disease[7]

All hajis should be well informed about their health status. Haj involves substantial amount of physical exertion and hajis should be ready for the same. They should seek medical advice as soon as possible either from their own Haj mission offices or from the nearest hospital or dispensary. All hospitals have staff who cn speak Arabic, Hindi, Urdu, Bangali and English. Lanugage barriers are common with Hajis from Turkey, Iran, and South East Asia. Translators and social workers available in all hospitals effectively tackle this problem round the clock. Care is absolutely free to all hajis. Use of water and juices should be encouraged as also the routine use of masks while they are suffering from respiratory tract infection. The guidelines for hajis set by Ministry of Health, Saudi Arabia are freely available in most languages and hajis should be advised to adhere to these. These are in the form of small pamphlets before and after food, avoiding salads and stale food and use of masks. Finally we sincerely believe that health education if given to all prospective hajis will go a long way in preventing many health problems causing tremendous suffering and missing of important haj rituals.

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SILDENAFIL CITRATE (VIAGRA)

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Impotence is defined as a consistent inability to achieve or maintain penile erection that is adequate for completion of sexual intercourse. It is also referred to as erectile dysfunction (ED). This complaint is commonly encountered in medical practice and has been recognized throughout history. Many people have claimed an effective treatment with herbs, plant extracts or animal parts and organs. Ibn Sina (Avicenna) had given a list of seeds, nuts, and roots of plants and animal organs as the treatment for sexual dysfunction[1]. Medically accepted treatment modalities so far were intracavernosal injection of papaverine, phentolamine or alprostadil and penile prosthesis[2]. Prostaglandin E (alprostadil) as uretheral suppository has also been used[3]. However none of these became very popular and the search for an orally active drug continued. However (VIAGRA), a recently found orally active drug for ED was found accidentally to have penile erection as a side effect.

Historical background:

A team of scientists working on anti-hypertensive and anti-anginal drugs in Pfizer sandwich site in Kent synthesized sildenafil in 1989. Clinical trials for its usefulness were started in 1991. It was found that drug was not very effective as an anti-hypertensive but patients were reluctant in stopping the drug. It was known from some patients that it helped them to maintain erection. In 1994, the team decided to start clinical trial of sildenafil for erectile dysfunction. The results were encouraging. In a trial of 3000 patients aged 19-87 years treated over a periof of five years, and many other trials, the drug was found to be very effective in organic, psychogenic as well as mixed etiologies of ED[4,5,6]. U.S. Food and drug administration approved the drug for treating male erectile dysfunction on 27th March 1998 and European Medicine Evaluation Agnecy approved it for a similar use in 1998[7].

Mechanism of action of sildenafil citrate (Viagra):

Sexual stimulation leads to the release of nitric oxide (NO) by neuronal endings and endothelial cells in the erectile tissue of penis called corpus carvernosum. This in turn activates guanylate cyclase, which converts guanosine triphosphate (GTP) to cyclic guanosine monophosphate. (cGMP). cGMP causes local smooth muscle relaxation and therefore flow of blood into the corpus cavernosum. cGMP is later metabolized by phosphodiesterase 5(PDE5). Viagra inhibits the PDE5 and thus. delays the degradation of cGMP. Men with erectile dysfunction produce small amouns of NO which are degraded and so erection is not sustained. Sildenafil helps such patients to maintain erection for some time more. There are seven types of PDEs in the body and sildenafil is the most effective competitive blocker of PDE5. It is blocked ten fold more than PDE6, 80 fold more than PDE1 and 1000 fold more than PDE3 and PDE4. PDE6 is found in retina and so the common side effect of color disturbances.

Structure:

The chemical name of sildenafil is 5(2-ethoxy-5- (4-methylpiperazin-1-sulfonyl) phenyl)-1-methyl-3-propyl-1, 6-dihydro-7h-pyrazole (4,3-d) pyrimidine-7-one. The structure resembles to some extent the substrate cGMP, that is how it competitively blocks PDE5.

Dose and effect;

Sildenafil cirate (Viagra)[8] is available as 25mg, 50mg and 100mg diamond shaped coated tablets. The recommended dose is 25-100mg, 0.5-4 hours before the intended sexual intercourse. Sildenafil is well absorbed from gut and reaches its maximum plasma levels an hour after ingestion. half-life is 4-5 hours and food delays absorption. Erection lasts for more than 20 minutes in more than 50% of the subjects. Higher doses lead to longer duration of rigidity. Sexual stimulation is a pre-requisite for the effect of viagra because it only inhibitis the degradation of neurotransmitters, which have to be secreted by sexual stimulation. Sexual satisfaction has been reported in most of the patients as well as their spouses. Effectiveness of the drug was established through a questionnaire, the International Index of Erectile Function (IIEF). This questionnaire was created for evaluating the effectiveness of sildenafil. The questions related to ability to achieve erection sufficient for sexual intercourse and maintenance of erection after penetration. The trials are on regarding the use of sildenafil in females.

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It is expected to increase vaginal scretions and thus might be useful in-patients with lubrication problems and dysparunia.

Side effect:

Several side effects of sildenafil have been reported. Headaches, facial flushing, diarrhea, stomach upset and muscle aches in pelvic area. Some patients develop nasal congestion[9]. Sudden cardiac death has been reported even in those who had no cardiac disease. Combination of viagra with nitrates causes severe drop in blood pressure. This might cause angnia, arrhythmia, M.I., sudden death or a stroke. Another well-known side effect is impairment of color discrimination possibily due to its effects on POE6.

Caution:

Concomitant use of nitrates for angina and recent stroke and M.I. preclude the use of sildenafil. Other conditions in which caution has to be observed include any heart or liver disease, sickle cell anemia, bleeding disorders, active peptic ulcer, retinitis pigmentosa, pyronies disease or any other deformity of penis. It should not be used along with other treatments of ED. Aneurysms (of CNS vessels) are known to rupture during sexual act so be careful if you suspect aneurysm. Sildenafil is already licensed for use in the United States and Europe. Around seventy people have so far died in USA as a result of this therapy. A 50mg tablet costs $6.8 in USA and around L4.8 in UK[8]. In Saudi Arabia it costs SR 35 per 50mg tablet and the demand is good. Possible reasons are good economic standards, good health status even in elderly subjects, and a common practice of polygamy[10]. Diabetes is one of the common cause of ED (around 20% of adult population is diabetic) in this community. It seems that the demand for sildenafil citrate will probaly be high everywhere in the world as sexual desire and ED would remain universally present[11]. It should be borne in mind that normal sexual response is a complex interplay of multiple psychological, hormonal, vascular, neurological and emotional factors. Sildenafil dose not substitute a proper evaulation of importance. Systemic diseases, mental disorders, neuropathies, myelopathies, endocrine diseases, and local penile diseases have to be addressed properly. Present trend worldwide is to give the drug a chance after ruling out the contraindications at the best). In psychogenic causes of ED, giving the drug may effectively break the viscious cycle and may be complimentary to psychotherapy. It may be mentioned that decreased sexual desire and activity in elderly is probably nature's protection of the self and the species, so care must be exercised while treating such patients[12]. Since sildenafil is not an aphrodisiac, normnal people should not use it. Although claims regarding the results are very good, but the actual usefulness will be known only after the drug is freely used and results are analyzed. It is possible that the euphoria associated with viagra might abate with passage of time.

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www.patents.ibm.com
www.viagra.com
www.pasteur.fr/conf/
www.ch./c.ac.uk
www.priory.com/sildenafil

POLYTHENE BAG INDUCED PSEUDO-ELPHANTIASIS OF GENITALS

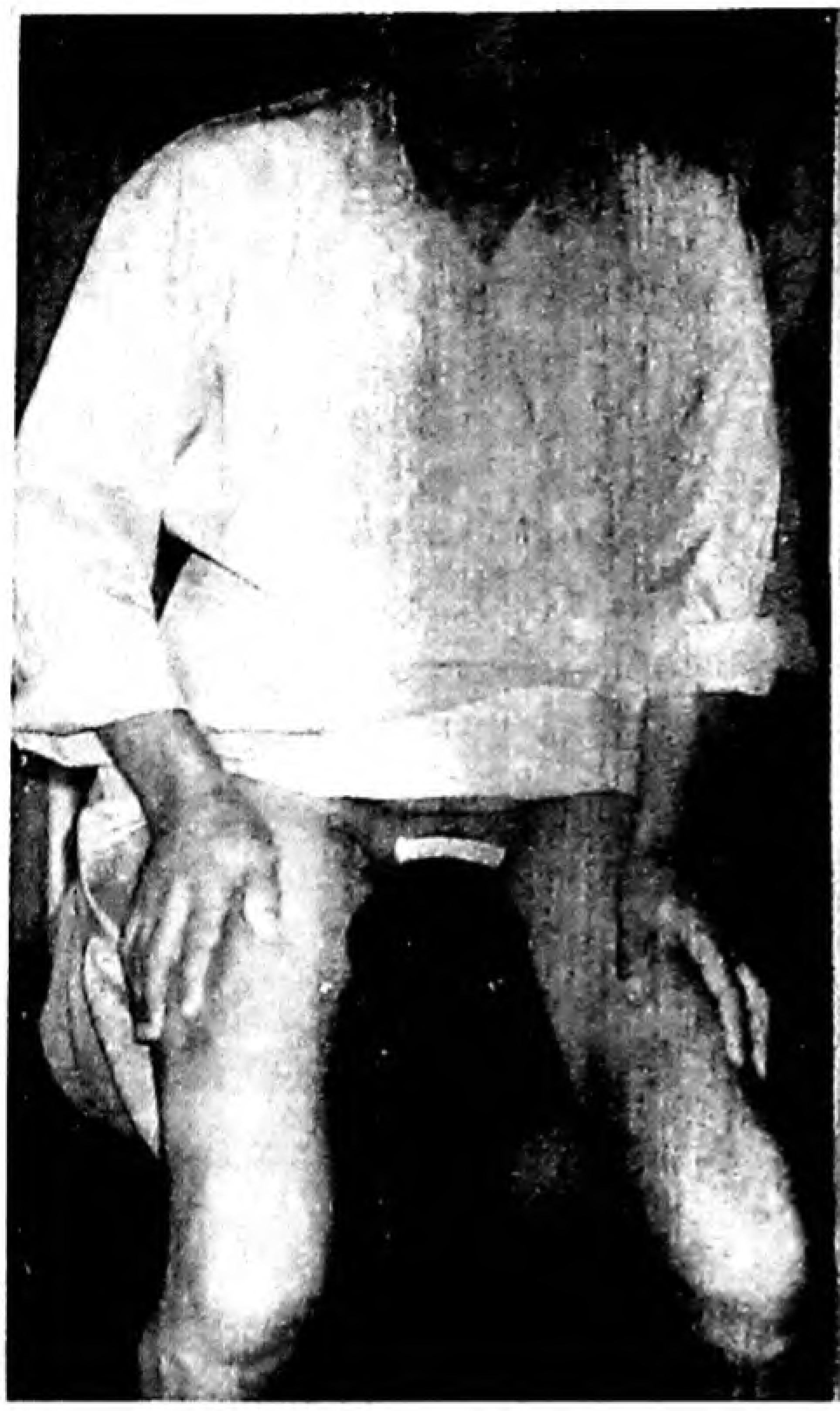

Figure A

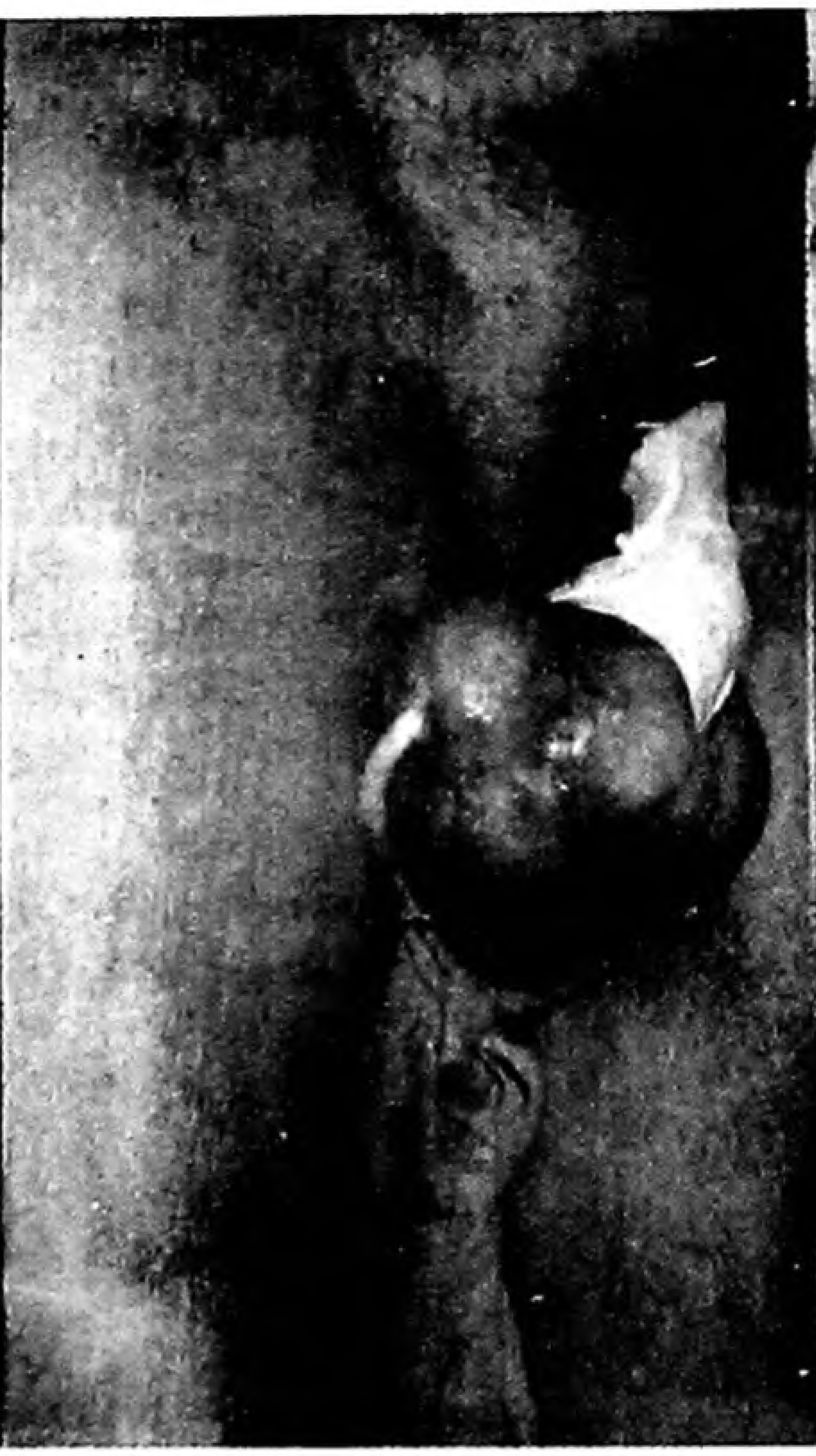

Figure B

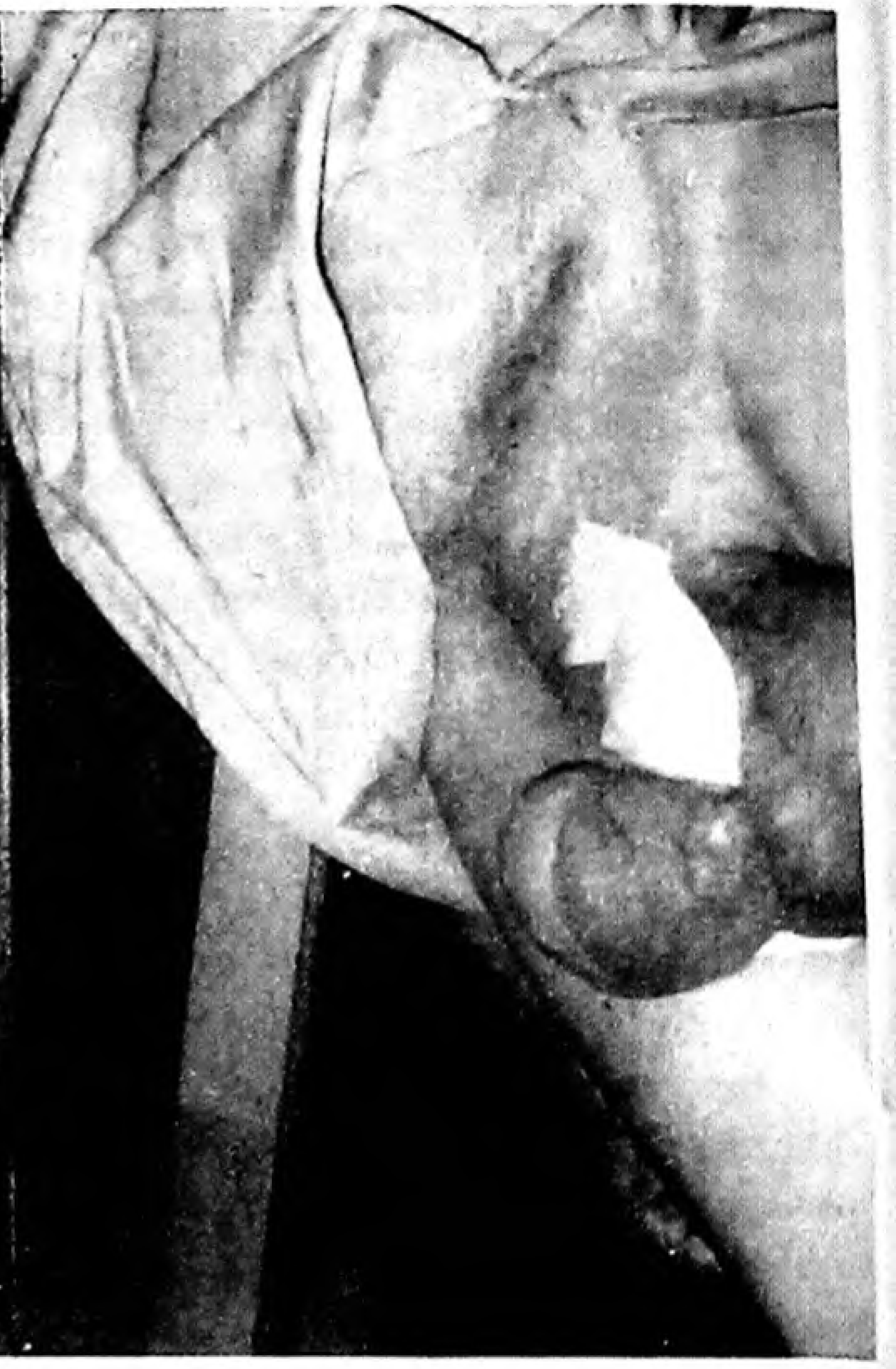

Figure C

A 70 year old man with history of nocturia and urge incontinence presented to our hospital with history of retention of urine. A self retaining 14 F Foleys catheter was placed and patient was discharged after 12 hours admission to the hospital. A follow up ultrasonography of genitourinary tract showed presence of benign hypertrophy of prostrate with mild bilateral hydronephrosis. A urosac was connected to Floeys catheter and patient was dishcarged with the advice of getting the Foleys catheter changed after 2 weeks under medical supervision. For some reasons patient could not report to hospital for about 3 months since he was relieved of urine retention with Foleys catheter in situ. The patient instead of connecting a urosac to Foleys catheter was mounting a polythene bag over his penis with Foleys catheter in situ (Picture a) which lead to hyperkeratosis of the skin over the penis giving rise to a picture similar to Elephantiasis of genitals (Fig. B). The patient was admitted to our hospital and underwent retropubic (Millins) prostatectomy and he was able to pass urine normally per-urethra but hypertrophy of the skin over genitals persisted even after follow-up of 2 months (Fig.C)

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SPECIAL ARTICLE

A COMPARATIVE STUDY OF ONLINE VS INTERNET SEARCHING

Z. Galzie

What is searching?

This refers to the process whereby a database or other source of information is searched, or interrogated from a workstation which may either be linked to a remote location where the data is held (either run on a host machine provided by an Online provider or across the Internet), or locally on a CD-ROM drive directly connected to the computer.

Information need

Since November 1993, my research interest has centred on investigating the more complex issue of the biological consequences of ectopic expression of proteins, notably on the possible causal relationship between over expression of basic fibroblast growth factor and the increased mobility and invasion of colorectal cancer cells. This has clear implication for the mechanisms of metastasis of colonic cancers. My information need at present is to explore what research has been done on this specific topic in recent years.

The two electronic information services I have selected for acquiring information on this specialized subject are:

1. A Web Search Engine (Northern Light)
2. An online database MEDLINE.

Search engines have different features from those of traditional online databases and CD-ROMs. The main differences consist in the indexing techniques (automatically in search engines, manually in the traditional informal retrieval systems), resource coverage, output ranking and search strategies.

The search Process: online

A database is searched, or interrogated by statements designed to locate all records that contain a certain or combination of terms or values. Once a subject search has been completed using appropriate keywords, it may be possible to narrow down the results even further by using boolean operators. The word may be present in any part of the record. To take a bibliographic example, it may occur in the title, the abstract, the journal title, so as hopefully to increase the relevance of the results.

To increase the relevance still further, most bibliographic databases include a field, normally called a 'descriptor' field (or 'controlled terms') in each record, into which appropriate keywords are placed when it is added to the database. In other words, somebody is making a decision about the subject content of the article in question. The keywords used, as many as appropriate, would normally be selected from a controlled list, or thesaurus, developed specifically for that database and updated regularly. This is a very useful technique because it overcomes problems such as when articles have cryptic or non-descriptive titles and un-informative or no abstracts. Equally, it gets around the problem of 'false hits' where the search term may be found in a record but in an unhelpful way.

The search process: the Internet

A free text search engine is very similar in concept to those you find with online interfaces; you simply type in a word, number of words or a phrase, and the search engine will check its own internal database of Web pages and will provide you with a list of results that match your enquiry, However this will only be a subset of the Internet and that subset will have been found by robot or spider programs.

Once the results have been retrieved, things start to happen rather differently with Internet search engines in comparison to online databases. Almost all of the free text search engines will attempt, as best as they are able, to relevance rank the results, to give you best matches first. Unfortunately, search engines all have their own algorithms to work out this ranking. Consequently running the same search across a number of different engines gives a completely different set of results.

Search Systems in this study

Northern Light

- Northern Light began in September 1995 in Cambridge, Massachusetts to address the shortcomings of conventional search engines, including the lack of organisation and quality information. Its database is estimated to have 67 million pages (hptt:/www.northernlight.com).
- Norhtern Light supports natural language searching as well as full Boolean capability (AND, OR, NOT), including parenthetical expressions, in all search forms.

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- The Northern Light research engine uses patented classification intelligence and precision relevancy ranking to improve Web searching. Many factors are examined that may increase or decrease the computed relevancy of a particular document or a web site.
- These factors include number of occurrences of query terms and the presence of query terms in document titles. Result lists are sorted with the most relevant appearing closest to the top.
- While the crawler does make note of MEGA tags, Northern light does not assign any particular relevance to words contained in META tags nor/are they used to control description on the result list.
- It also offers a charged service to view documents from a set of "special collections" from varied sources, such as newswires, magazines, databases and journals.

Northern Light enables searching with fields (OR indices) to help return more specific results. Fielded searches include

URL	:	searches for a URL or partial UR.
TITLE	:	searches for a document title or partial title.
PUB	:	searches for Special Collection documents by journal title.
COMPANY	:	searches for information about a particular company.
Ticker	:	Searches for information about a company based upon the company's stock ticker.
TEXT	:	searches within the text of the document or website.
RECID	:	searches for a specific special collection document by Northern Light Document ID number.
SORT	:	date sorts results by date, from newest to oldest.

Fielded searches can contain full boolean expressions. They can also be contained within larger Boolean expressions.

If an engine is focussing on information professionals, it will attempt to offer some sort of categorisation of Web pages. As boolean searches are dropped, a range of statistically based search facilities for refining simple search facilities have been developed. The most successful of these to emerge is Northern Light's "Custom Search Folders". Northern Light categories documents on search folders by placing them into categories and subcategories displayed in hierarchical result. This was the reason I selected this very search engine for my information need.

An online database Medline (Medlars on Line)

- is the National Library of Medicine's premier bibliographic database covering the fields of veterinary medicine, the health care system, and the preclinical sciences.
- It can be obtained in hard copy, via online hosts, a number of different CD-ROM publishers (and used on a standalone machine, networked or pre-cached) or across the Internet.
- NLM (http://www.nlm.nih.gov/databases/freemedl.html) offers Pub Med. and Internet Grateful Med, two free systems to search MEDLINE (http://www.nla.gov.au/medline).
- contains bibliographic citations (e.g. authors, title, and journal reference) and author abstracts published in the United States and 70 foreign countries during the current four years.
- contains over 9 million records dating back to 1966.
- has worldwide coverage, but 88% of the citations in current MEDLINE are to English-language abstracts:

MEDLINE Facts

- Recent references are contained in MEDLINE: segmented MEDLINE Backfiles (MED93, MMED66 and OLDMEDLINE) contain older material.
- Indexing for the current year of MEDLINE runs from November through October.
- Approximately 33,000 new citations are added each month (about 7,300 weekly).
- MEDLINE is updated weekly, January through October, and twice in the month of December.

The terminology of the subject domain is encoded in MeSH (Medical Subject Headings), which is a hierarchical thesaurus used for indexing documents. In MEDLINE, abstracts have been indexed manually with MeSH terms, bypassing some of the complexity and richness of medical terminology. A given medical term often has a number of synonyms, as well as potentially a large number of more specific terms, and locating the most relevant document to answer a specific information need should include searching for these related terms. A variety of search systems allow to search MEDLINE records using boolean operators, explosion to search for broader concepts by retrieving documents that contain narrower terms, and other features.

Preparation of Search Strategy

Conducting a useful search strategy involves the following:

1. Necessary search aids, such as
   - System and database information.
   - Vocabulary control devices and classification schemes, dictionaries, glossaries, etc.
2. Information about the query, obtained by
   - Consulting different tools to get a clear understanding

of the information requirements.

- Determining the level of requirement, e.g. urgency, restrictions regarding number, type, language etc., of documents, confidentiality, cost and other related factors.

3. Choice of database(s): this may be governed by;
    - Subject coverage
    - Document coverage.
    - Accessibility
    - Period coverage.
    - Search fields
    - Search devices/tools
    - Performance.
4. Analysis of the query and selection of search terms through:
    - Knowledge of the systems and files, and
    - Use of reference tools.
5. Planning and carrying out the search through:
    - Preparation of the initial profile.
    - Preparing the search statement by using Boolean operators such as OR and/or AND, if necessary.
    - Broadening the search by reducing the 'AND' links and increasing the 'OR' terms, if necessary.
    - Restricting the search to one or more fields, in a specific language, in specific types of records, etc.
    - Specifying the proximity of the search terms in the retrieved records, and so on.
6. Obtaining results and communicating further with the system:
    - Using the most suitable display/print format(s), and
    - Modifying search term(s) or strategy if the results are not satisfactory.
7. Keeping a record of the
    - Steps followed in the search, and
    - Search output in printed form or on disk.

Search Session

My search session involved most of what has been stated above. The query terms 'colorectal carcinoma' and 'fibroblas growth factor' were tested twice by running a simple and advanced search on the two systems described here. The first ten matches returned were assessed for relevance based on a five degree scale. Five factors were considered when evaluating performance: usability of the system, validity of matches, precision of outputs, search capabilities and overlap between the outputs.

Discussion

It emerged from this search that medical information on the Web varies widely and may be anywhere on a spectrum ranging from highly reliable information to inconsistent ephemera. Results from the test showed that a search engine does not discriminate between sites on quality grounds. As a consequence the searcher looking for medical information on the Web will have to assess the quality of contents.

Another major problem while searching for medical information on the World Wide Web is the presence of much noise, resulting from the varying values of the published infonnaltion. Search engines have usually taken one of two approaches. They may index the full text of a large number of sites and rely on the user to filter out noisy results. Alta Vista, Lycos, and Infoseek are examples of such systems. The major disadvantage is the large result set returned for many querres and the variable quality of these results. Another approach is to choose the major sites manually and search and browse over his limited selection, and instead of searching the full text, index manually generated descriptions of the information resources. An example is Yahoo. For both approaches clinically useful information is usually lost in these search engines among the consumer-oriented, medically irrelevant, or variable quality informaltion. This observation led to the creation of sites such as Medical Matrix, Clini Web and MedWeb which take a similar approach to Yahoo, but focus on medical information.

When it comes to searching databases, there are several differences between Web search engines and the traditional online services. Web search engines work with less complex search commands, though it may be possible to use boolean and adjacency operators as well as truncation in the search statements. According to Poulter (1997) Web search engines typically use some form of relevance ranking by weighting items in the results list according to the frequency of occurrence of search terms, the place of occurrence of the terms, and other criteria. The lack of comprehensive coverage, the inability to distinguish between popular materials and serious research works, lack of a controlled vocabularly, and moreover the casual approach of the web page designer often make the web databases more difficult to search.

A searcher on the Web may face a significant problem concerning the retrieval systems recall facilities. This is bound to happen as the information resources on the Web are not restricted to any single collection. One may not be sure of the exhaustivity of the search. In other words the Web environment is unconstrained and hence one can never say exactly how many documents should be retrieved, let alone how many in total are available. Clarke and Willett (1997) report recent research that shows a way of calculating the classical parameters for measuring information retrieval systems, viz recall and precision, in the Web environment, and thus show that it is pos consider recall and precision when evaluating Web search engines.

Also downloading the output from a web search may often pose problems. One important point to remember is that, unlike that of online databases, the output is not in ASCII format. The records of online databases, even from different procedures, follow a moe or less standard format. Websites, however, contain a variety of information in different formats; sometimes the information presented on a web page may be a collection of different files located in different places in different formats.

The need for information professionals to evaluate Web sites in order to filter through information to facilitate access to 'quality' information has been discussed by some authors. There are a number of sites available which attempt to select, evaluate or review Web sites producing information. When they are intended for an audience of academics and research users, they use more formal evaluation criteria implemented by information professionals or subject experts. A review of sites evaluating Internet information sources can be found in Cooke (1996).

OMNI (Organising Medical Networked Information) (http://omni.ac.uk) is a relatively small site, provided by library and information professionals, offering detailed evaluation of medical resources. It provides a UK point of access to quality biomedical networked information resources. OMNI has published guidelines for resource evalualtion.

In genral what each format has to offer:

Online databases

Online databases will generally offer:

- Faster retrieval of data;
- A larger number of records, often going back many years, which you can search in one go, or limit your search to a specified time period;
- They will usually be more current than CD-ROM versions of the same database;
- There are more of them;
- Training and technical support services provided by the hosts are often very excellent.

Disadvantages include the cost of a search

The Internet

- is easy to use;
- users are very often keen to try it out for themselves;
- is reasonably cheap and fast.
- can provide very current information (some of the newspapers are updated four times a day, for example);
- allows data to be transferred in a number of diferent formats: text, graphics, moving images, sound.

Conclusion

Medical information is often difficult to find on the World Wide Web, compared to MEDLINE, standing in contrast with the potentially larger usefulness of the Web, given that it presents full-text information instead of just abstracts. The general Internet search engines are helpful. However websearches are not precise and controlled as MEDLINE searches.

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THE CLINICAL PATHWAY APPROACH TO PATIENT CARE

Syed Amin Taabish M.D.

The practice of medicine combines both science and art. Science-based technology is the foundation for the solution to many clinical problems: the dazzling advances in biochemical methodology and in biophysical imaging techniques that allow access to the remotest receses of the body are the products of science. The combination of medical knowledge, intuition, and judgment defines the art of medicine. Tact, sympathy and understanding are expected of the clinician. In the care of suffering a clinician needs technical skill, scientific knowledge, and human understanding. The human practice of medicine requires consideration and integration of both objective and subjective outcomes.

The clinical Pathway approach to patient care seeks to coordinate resources across the healthcare delivery system. The growing interest in evidence-based medicine and assessing the outcome of treatments, and a commitment to integrated care across primary, secondary and tertiary care sectors, all contribute the making disease management an attractive idea.

Clinical Pathways view patients as entities experiencing the clinical course of disease, rather than viewing their care as a series of discrete episodes or an fragmentary encounters with different parts of the healthcare system[1].

Clinical Pathways also know as Disease management has three components:

◆ A knowledge base that quantifies the economic structure of a disease and includes guidelines covering the care to be provided, by whom, and in what setting for each part of the process;

◆ A care delivery system without traditional boundaries between medical specialities and institutions; and

◆ A continuous improvement process with develops and refines the knowledge base, guidelines and delivery system[2].

Uncertainty in Clinical Practice

The Practice of medicine is becoming increasingly complex and paradoxically, despite greater knowledge, even more uncertain. Clinicians cannot afford to avoid uncertainty or pass it off as an inherent aspect of the art of medicine.

The practice patterns of individual clinicians are fundamental determinants of the quality, ethical standards, and cost-effectiveness of health services. The uncertainties inherent in medical practice are the direct result of biological variability and an enormous range of interchanges between a host of factors. Constructive approaches to uncertainty in health care must start with clinicians.

Clinical decision making is complex, involving intuitive as well as rational thinking to take account of valve judgments and social, psychological, and moral factors. The complex processes of clinical management and decision making involve continuous reassessment and reasoned view based on additional data and knowledge from various sources. Clinicians must now be expected to at least estimate the magnitude of benefits in order to justify the costs and risks of further investigative intervention.[3]

Disease management

Clinical pathways are most suitable for the diseases about which most is known, for which it is easy to develop disease proctocols that are evidence based, and in which it is possible to measure outcome[1]. The most typical diseases favoured for this approach include diabetics, visual impairment from catracts, benign prostatic hypertophy, decubitus ulcers, urinary incontinence, heart disease, cancer, stroke, asthama, mental health (depression in primary care), dermatological diseases, chronic pain and sickle cell disease. Angina, AIDS, cystic fibrosis, hypertension, renal dialysis, peptic ulcers and drug misuse are less commonly managed.

The spectrum of clinical pathways extends from health promotion and disease prevention, through diagnosis, treatment and rehabilitation, to longterm care.

Guidelines have been produced for a very wide range of diseases. These are the analysis of the effectiveness of the different methods of diagnosis, treatment and investigation ranging from such things as effective care in pregnancy and child birth to the long term care of elderly people.

Guidelines may be especially effective when they specify which grades of staff should undertake particular types of work. This is easier to organise and monitor than the details of diagnostic or therapeutic activity.

An example which readily demonstrtes the clarity, specificity and level of detail is Coronary angiography

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indicated in a patient with chronic stable angina (without strong contraindications to CABG Surgery) who has received maximal medical management and has:

- ◆ Angina with mild exertion (class III or IV)
- ◆ A Positive exercise ECG
- ◆ A negative exercise thalium Scan
- ◆ A Positive exercise scan.

In Massachusetts, following institution of general anaesthesisa guidelines, no episode of carebral anoxia were reported in patients where the aneshetist followed the clinical pathways[4].

The American College of Obstetrics & Gynecology formulated guidelines to reduce the frequency of caeserian section by 50%-80%[4].

Pitfalls

Guidelines are often over-cautious in their recommendations and can result in patients being overtreated, their treatment can be extremely costly. An example[5] was found in the recommendation of the British Pacing & Electro Physiology Group which suggested that the use of complex pacing was necessary in heart block and suggested a particular piece of equipment which was extremely sophisticated. The authors of the paper felt that using wich equipment on a predominantly elderly population would be disadvantageous both in terms of the needs for follow-up of those elderly people and the increased cost.

A great number of studies have tried to put together and then test guidelines for the use of laboratory investigations. A large review has suggested that such guidelines are variable in the impact they have[6]. Some guidelines suggest the negative approach alluded to above, that certain things should never happen. An example of this has been in the use of neuroleptic drugs in patients with learning disabilities[7]. There is no evidence that such drugs are of any use for such people and they have considerable risks. Gudelines which suggest that such treatment should be used only in expectional circumstances are reasonably easy to followup.

In some areas, gudelines have been greatly assisted by the development of meta-analysis to back up the scientific data which is necessary for gound work in the area. An example is in cardiac rehabilitation[3], where matched analysis have shown that rehabilitation reduces cardiac death and sudden deaths. Those with a low risk of further heart attacks are shown to benefit best by modification of their risk factors, particularly smoking.

The use of Pathways

The best guidelines have the advantage of cutting across different specialitty boundaries, giving advice on which parts of the service can be given by general practitioners and which need specialist care. It is assumed that adherence to the pathways will improve the standard of care and therefore the well-being of patients.

In the U.K. the guideline set by the Royal Colleges fit in with the development of Community based care, for the guidelines include directions about what can and cannot be attempted in hospital or in the community, given the amount of expertise available locally. The best guidelines are therefore locally set up, or at least local modifications of national guidelines. The guidelines should include details of the marågement of the service, and donot simply restrict themselves to the nuts and bolts of therapy[9].

The process of Developing Pathways

The process contains three steps:

- ◆ Detailed evalualtion of available research All pertinent studies, particularly candomised controlled trials of competing approaches of care, are analysed for their ability to produce optimal outcomes in care.
- ◆ A panel of experts reviews the results fo the literature review and correlates these with their expert clinical experience. Recommendations are written.
- ◆ The results of the expert panel are then reviewed by the professional organisation before written gudelines are issued.

The characteristics of useful guidelines include comprehensiveness, specificity, detailed destructions, clear statements of judgment, inclusivity of relevant factors tot he decision making process and marageability — presented in such a way that they can be easily accessed and understood[10].

Setting Standards

The development of clinical guidelines is an appraoch to improvng the quality of care that has been used in the USA for some years and has recently increased in popularity side of setting out best practice in some detail. It is considered an important new tool in distinguishing appropriate levels of care from unnecessary care.

Clinical Pathways are the direct application of guidelines to clinical practice. These are formally developed highly specific guideline based on the clinical research literature and the collective judgments of expert physician[10]. The result should refine recommendations review, guideline become "standard, performance measures, or review criteria".

Clinical Pathways rely on experts to help set up the guidelines, sometimes with advice from patients or patients organisations.

The purpose of clinical pathways is to enhance quality, appropriateness, and effectiveness of healthcare services. Making such standards explicit will enable a wider range of clinicians to review their work more readily and will help lead to improvement in practice without any risk of compromising clinical freedom[11].

The most straight-forward are standardised protocols for the treatment of particular conditions, and consititute an algorithm suggesting certain investigations optimal management of that condition.

Establishing a Programme

The success of clinical pathway programme depends on several factors: Committed managers, an organisation prepared and willing to take this route, a structure process of managing change, a structured approach to analysis, a well developed performance management system - with the patient at the centre of the process[1].

The purpose of the programme must be clear at the outset, and the organisational structure within which the programme will operate must be established. The skills a resources required must be identified, as well as the diseases to be managed. Links and alliances must be in place at the outset.

Clinical Pathways Programmes depend on a diverse set of skills and tools[12]:

- knowledge base
- Outcomes research
- Information systems
- Tools for influencing behaviour
- Continuous quality improvement
- Ability to share and manage financial risk
- A longterm perspective.

The characteristics of successful programme include: patient centred and outcome focused, objective and evidence-based, flexible and pragmatic, dynamic, based on what happens in the real world and designed to minimise difficulties and maximise benefits.

Preparing for a change process requires analysis and an objective assessment at the out set of what the problem is and how it might be tackled. Putting the patient at the centre of the process allows bottle necks and problems of coordination to be identified. Finding solutions to some of these problems may entail radical change.

Stake holders

The main stake holders in a clinical Pathway approach are the health system, clinicians, and patients. The benefits for the health system include better outcomes, introduction of best practices, outcome measurement, cost effectiveness, consistency of treatment, improved allocation of resources, improved systems overall, and seamless care. Benefits to the clinicians include opportunity to work effectively and collaboratively, good access to information and increased professionalism. The benefits to the patients include better outcomes, more informed patients, greater involvement, continuity and consistency of care, preventive treatment and patient driven guidelines.

The disadvantages of clinical practice guidelines include:

- Restriction of treatment (Patients)
- Increased responsibility for the patient
- Threat to clinical freedom
- Conflict of interest between demands of patient and protocol
- Changes the dynamics of doctors-patient relationship and the trust underpinning it.
- May cost more (to health system)
- Takes time and commits start up resources
- Could introduce rigiditiess and block innovations.

The limus test for a successful programme will be the extent to which the patient's interests are given primacy and then met. Clinicians need to be convinced that the disease management approach will heighten their professionalism because it entails adopting best practice[1].

Attitudes towards Pathways

Clinical guidelines outline procedures to be followed and thus help doctors in making decisions. Attempts to implement clinical Pathways have met with limited success because the behaviour of clinicians often has not changed in line with the recommendations in the guidelinces[13].

Persuation is necessary to encourage use of clinical Pathways and that to be persuaded doctors will need to see that the benefits to clinical pathways outweigh the drawbacks[14].

Introduçing guidelines into practice

Although guidelines can be used to help to change clinical practice, their adoption and use is not automated and will depend to a great extent on how they are developed and implemented. The behavioural factors which influence adherence with Pathways are very complex[15].

Educational interventions, requiring more active participation by professionals are more likely to lead changes in behaviour.

Implementation strategies are more likely to be effective when they operate directly on the consultaiton between the professional and the patient such strategies include restructuring medical records, patient specific remainders during the consultation and patient mediated interventions. Strategies operating outside the consultation that have been rigorously evaluated include [illegible] specific feed back and aggregated [illegible] with guidelines, financial incentives, explicit marketing, and professional peer review implementation strategies which are near the end user and integrated into the process of healthcare delivery are more likely to be effective[15]

Desirable attributes

Well implemented clinical guidelines can be used to change the process and outcome of case. Guidelines are refarred to as valid if, when followed, they lead to improvement in patient outcome at acceptable costs. Validity depends on how well evidence is idenified, synthesised, and incorporated into the Pathway and therefore, how and by whom the guideline is developed[15].

Many methods can be used to translate evidence into practice recommendations, including peer groups, nominal groups, Delphi techniques, and concensus conferences.

Pathways should not be solely concerned with clinical effectiveness but should also pay regard to the costs of treatments if they are to maximise improvements in health status[16].

Pathways should clearly indicate the basis of each recommendation and the degree to which it is supported by good research evidence. The target patient population and circumstances under which the recommendtions apply also should be clearly stated. Clarity of definitions, language, and format is also essential[15].

Research

Research is needed to identify the most cost effective methods for developing valid and reliable Pathways, which should include research into methods for deriving recommendations and incorporating costs. Research is also required of the effects of different formats and styles of Pathways on their adoption and of barriers to adopting Pathways. It is imperative to develop valid instruments for critically appraising Pathways[15].

Summary

Clinical Pathways can provide a useful framework for managing patients with particular diagnosis or symptoms. They also offer guidelines that protect patients from receiving substandard care. They can also protect consecientious care givers from inappropriate charges of malpractice, and they can protect society from the excessive costs. Associated with the overuse of medical resources. Clincial practice guidelines will improve the delivery of care if its limitations are honestly acknowledged and it has the full support of clinicians and othes to drive the quality and improve outcomes. It represents good practice and common sense in the provision of effective care.

However, Clinical Pathways tend to oversimplify the complexities of medicine. Different groups with different perspectives may develop divergent recommendations regarding issues as basic as middle-aged persons.

The challenge for the physician is to accept and incorporate into the clinical practice the useful recommendations offered by the experts who prepare clinical practice guidelines without accepting them blindly or being inappropriately constrained.

Clinical Pathways represent good practice and common sense in the provision of effective care- but it will only be as successful as the robustness of its evidence base and the calibre of its managers.

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PEDIATRIC QUIZ-2000

Select the correct answer.

1. *One gram of hemoglobin yields:*
   a) 25mg. of bilirubin
   b) 35 mg. of bilirubin
   c) 45mg. of bilirubin
   d) 14mg. of bilirubin

2. *The following are handicaps of a small for dates baby except:*
   a) Intrauterine hypoxia
   b) Hypoglycemia
   c) Hyaline membrane disease
   d) Congenital malformations

3. *After first week of life caloric needs of growing newborn babies range between:*
   a) 120-150 Kcal/kg/day
   b) 90-100 Kcal/kg/day
   c) 60-80 Kcal/kg/day
   d) 160-200 Kcal/kg/day

4. *Which of the statements about breast milk is not correct:*
   a) Contains 1-2x10^5 leucocytes/ml
   b) Macrophages make upto 90% of white cells.
   c) Contains 3.5gm fat/100ml
   d) Is deficient in vitamin A

5. *Regarding kwashiorkor following statements are correct except:*
   a) It means deposed child no longer suckled
   b) Becomes evident after 5th year of life
   c) Loss of muscular tissue.
   d) Dermatitis is common.

6. *The factors influencing growth and development in a remarkable way include all except:*
   a) Genetic
   b) Nutritional
   c) Emotional
   d) Chronic disease
   e) Climatic

7. *The iron stores in a term infant (newborn) suffice for:*
   a) First year
   b) First two years
   c) One month only
   d) First six months.

8. *The term growth refers to:*
   a) The process by which the fertilized ovum becomes an adult person.
   b) The milestones
   c) Changes in body function
   d) Changes in physiological fuctions of body

9. *The following statements about pertusis are correct except:*
   a) 50% of cases are accounted by school children
   b) Causative organism is Bordetella pertusis
   c) Incubation period is 7-10 days
   d) Relapses are common
   e) Three stages each of about 2 weeks are known
   f) Infectivity remains from 1 week prior to 3 weeks after the onset of typical paroxysm.

10. *Acute glomerulonephritis accounts for which proportion of childhood renal disease:*
   a) 25%
   b) 50%
   c) 40%
   d) 90%

11. *Usual interval between a streptococcal infectionof throat or skin and onset of AGN is:*
   a) 6 months
   b) 3 months
   c) 1-3 weeks
   d) 5 days

12. *All except one is true for portal hypertension in children:*
   a) Extrahepatic portal hypertension is the commonest cause:
   b) Ascites is an integral part of extrahepatic portal hypertension.
   c) Massive spleenomegaly with hyperspleenismis diagnostic.
   d) Spleenectomy offers relief in most patients.
   e) Umblical vein sepsis/catheterization predisposes to the disease.

13. *All is true for UTI in children except:*
   a) It is common in female children.
   b) Disease may be asymptomatic.
   c) Enuresis may be the presentation.

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From the Department of Pediatrics Govt. Medical College Srinagar
Complied by Prof. A.S. Sethi, Dr. Kaisar Ahmad & Dr. M. Farooq Mir

- d) Long term followup cultures are not needed.
- e) Patient needs to be evaluated for congenital urogenital anomolies.

14. All is true for nephrotic syndrome except:

- a) It is a common cause of anasarca in children.
- b) Commonest cause is idiopathic nephrotic syndrome.
- c) Relapses are common in disease.
- d) Renal biopsy is mandatory for diagnosis of idiopathic nephrotic syndrome in children.

15. Hemoglobin of 10.5gm% in a 10 weeks old child is:

- a) Anemia
- b) Normal
- c) High
- d) Needs blood transfusion.
- e) No therapy
- f) B 12, folic acid
- g) Exchange transfusion.

16. Diagnosis in a female with bleeding diathesis, prolonged clotting time, low factor VII is:

- a) Hemophilia A
- b) Hemophilia B
- c) Hemophilia C
- d) All of the above
- e) None of the above.

17. Which lesion is most prone ito bacterial endocarditis:

- a) PDA
- b) VSD
- c) Congenital aortic stenosis
- d) ASD
- e) Pulmonary stenosis

18. State whether true or false:
The distinguishing characterististics of simple partial seizures is that the patient remains:

- a) conscious...... Ture/False
- b) Verbalize during sizure.... True/False
- c) No postictal phenomenon follows the event...... True/False.

19. About febrile seizure stick two incorrect statements:

- a) Seizure is generalized.
- b) Convulsion associated with rapid rise of temperature >39 degrees celsius.
- c) A brief postictal period follows a seizure.
- d) 25% of children have recurrent febrile seizures.
- e) Seizure occuring before 9 months of age carries a bad prognosis.
- f) Incidence of epilepsy is 4% when several risk factors are present.
- g) Prologned anticonvulsant therapy is not recommended.

20. Nutritional recovery syndrome (Gomez syndrome) is characterized by all except:

- a) Ascites
- b) Hepatomegaly
- c) Eosinopenia
- d) Gynecomastia
- e) Parotid swelling
- f) Prominent abdomino-the oracic veins.

The Quiz is open to all doctors except those working in the Pediatric Hospital, GMC Srinagar. The entries should be addressed to Prof. A.S. Sethi (Head of the Department, Pediatrics Govt. Medical College, Srinagar) First all correct entry will receive a one year's subscription to JK-Practitioner

EFFECTS OF MENTAL STRESS ON HEALTH IN KASHMIR VALLEY PARADISE IN TRAUMA?*

Pim Scholte

Introduction:

The seminar workship in November 24-25, 2000 was an offshoot of a workshop on mental health with Voluntary Health Association - J&K held in August 2000 wherein psychiatrists who attended expressed the need for such a seminar to inform medical doctors on recognizing and managing stress related illnesses.

The objectives of the seminar was to increase awareness and knowledge among the health professionals of (traumatic) stress related psycho-social complaints and to identify possible fields of action for MSF.

Preparations for the seminar took two weeks - with the help fo the Social and Preventive Medicine, Government Medical College (GMC). A lsit of 60 invitees to the seminar workshop was drawn up. Some 30 doctors from GMC and the Sheri-Kashmir Institute of Medical Sciences (SKIMS) participated in this activity. In addition, 10-30 medical students from GMC also participated in the seminar.

Presentations

Dr. Pim Scholte, a psychiatrist from the University of Amsterdam in the Netherlands, gave input on the different risk factors that could predispose an individual to developing PTSD and the determinants of outcome. He also discussed the different levels of mental health intervention in the community, utilizing resources available to the individual and the community to help cope with the stresses they encounter.

Ms. Reine Lebel, a clinical psychologist from Canada discussed the counseling process and its importance at the grassroots level. She taslked about the qualities of a good counselor - the importance of confidentiality and privacy where people could feel comfortable to talk about their feelings. She also emphasized the importance of listening skills.

Dr. Masood Tanvir and Dr. Muqtasid Kamili from the Department of Medicine discussed about the stress related illnesses that clinicians encounter in the medical practice and the problems they have in identifying and managing these patients. According to them, there is not enough psychiatrists to handle the number of patients coming with psychological problems. At the moment, the ratio of psychiatrists to the population in the valley is 1:200,000. There is also inadequate knowledge and training in psychiatry for somatization in the hospitals and their daily practice.

Though a rough estimate may put the figures of psychiatric problems in a general population at 30-40%, Dr. Kamili said these could even be above 50% and many of these patients have been moving from doctor to doctor for months if not years.

The majority of these problems could be grouped and described as: Anxiety Disorders, Depression and Post-Traumatic Stress Disorder (PTSD). Yet these are not easily recognised/diagnosed or treated properly and the patient moves from doctor to doctor over the years.

He also pointed out that basically clinicians face problems such as lack of time in dealing with patients who have somatization disorders, lack of proper screening methods, inadequacy in dealing with psychosexual problems and partial (sub-syndrome) Post Traumatic Stress Disorder (PTSD).

Dr. Tanvir suggested psycho-eduction to be done for the patients and the populaton, to put more emphasis on psychiatry in the undergraduate level, on postgraduate specialization in psychiatry within the state and on sponsorship outside the state. To encourage NGOs in the field of psychiatry, continue medical education at the district levels, to train mental health facilitator -multi-purpose workers, develop a simple scale which primary care physicians could use in identifying psychological disorders, create post-disaster psychological debriefing and train primary care-psychiatrists who would have one year training in psychiatry.

On a positive note, he mentioned that despite experiencing sustained and severe stress for over a decade, the people of the valley seemed to have coped with the

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*This Seminar-Workshop was organised by Medicines Scans Froniters (MSF) in Collaboration with Department of Social and Preventive Medicine, Govt. Medical College Srinagar, Kashmir (India)

Correspondence: Dr. Pim Scholte, University of Amsterdam, Netherlands.

stress well or at least better than many other people would. He attributed this to the role of religion and the religiosity fo the population. However, he conceded that long term effects/sequelae are yet to come.

Dr. Mushtaq Margoob from the Department of Psychiatry gave an overview of the psychiatric cases in the valley. In his presentation, he said that the number of patients presenting at the OPD of the psychiatric facility in Srinagar increased from 6 in 1990 to an average of 250-350 patients a day for the year 2000. The psychiatric facility is severely understaffed to handle all these cases. He emphasized that a lot of these patients could be managed by non-psychiatrists or even family. He also mentioned the increase in the number of PTSD cases in the valley. Till 1989, there was no case of PTSD recorded at the hospital but he also mentioned that could also be overlooking cases presenting before. In 1995, there were 46 cases and in 1999, there 77 cases recorded in three month period.

He suggested that, sustaining interactions between experienced NGOs like MSF and the medical establishment, strengthening consultation -liaison between psychiatric activities and GMPU activities, teaching psychiary as a compulsory subject, helping students solve/cope with their problems with the active support of their teachers and encouraging meditation and spiritual type of treatment such as the involvement of faith healers as an important component of psycho-social type of intervetion, should be taken into consideration. Finally, he suggested a community based extensive research project regarding psycho-social problems could be implemented.

Workshop:

During the workshop, the participants were given four questions to discus among themselves.

1) For the question what are the complaints related to everyday stress that present to them in their practice, the participants came up with the following:

Somatic symptoms without Organic Cause

- aches and pains, headache, epigastric pain, low ache, general weakness, easy fatigability, lack of energy, palpitations, alternate diarrhea and constipsation, feverishness, loss of memory, chest tightness, fainting attacks, panic attaks

Depressive Symptoms

- loss of interest in surroundings and work, decreased appetite, insomnia, decreased libido/psychosexual disorders, depression without somatization, suicide attemps, feelings of disgust, weeping episodes

Organic lesions precipitated by Stress

- stroke, myocardial infarction, pneumonia Presenting symptoms varied from patient to patient and depended on factors such as socio-economic status of the patient, his/her psychological state, magnitude and nature of stress, time/duration of stress/symptoms, age and sex and whether patient was directly or indirectly affected by stress.

2) They were also asked how they identify these category of complaints. According to them, these patients were identified through history of psychological trauma, absence of organic basis for such complaints and normal clinical and laboratory findings.
3) Asked on how they dealt with these type of patients, they said these patients were managed symptomatically. Counseling and psychological support was also given. For repeated consultations for the same problem, these patients were then referred to psychiatrists.
4) They were then asked if there were options available. Suggestions from the medical community regarding options to improve psycho-social care included:
   1. Training a core group of people-general clinicians, nurses, paramedics, social workers and teachers could be trained in identifying patients with psychological complaints, counseling and follow up.

      These could be done at diferent levels from Srinagar to the district level down to the village level where village health workers can be trained as "barefoot" counselors.
   2. Psychological education among the general population
   3. Increased interaction between non-psychiatrists physicians and psychiatrists
   4. Increasing the number of trained staff.
   5. Training of all doctors in the valley in psychiatry- a short course in identifying and managing common psycho-social problems.
   6. Involvement of local leaders (imams, religious leaders, teachers, social workers) in psychosocial programs at the community level.

Recommendations:

During the second day, they were then asked what they could do to address the issue of increased mental health problems in the valley and what MSF's role could be in helping to address this problems.

- Establishment of a training center where medics and paramedics can be trained. This center need not be a new physical center but a space set aside for such pruposes within the existing structures of GMC.

- Train people from the grassroots level such as teachers, social workers, village health workers, recognized community leaders.
- Identify agencies that could facilitate such a training like the GMC and the Directorate of Health Services -these then could organize the venue of the training and the participants who could be trained.
- Train teachers in psycho-education and counseling since they are in regular contact with students
- Use media such as radio/TV for awareness raising on psycho-social problems. Organize a committee of doctors who can participate on a regular basis in such a program.
- Organize a network for referrals of severe psychological cases from the villages to the city.
- See to the establishment of a decentralized, non-medical part of the program, through community leaders and existing social networks.
- Explore the possibilities of application of non-verbal/ counseling intervention techniques (e.g. body-oriented techniques, handicraft, artistic expression, rituals.).

The Role of MSF:

For MSF it is clear that there is no lack on expertise and knowledge amongst the medical counmunity in the valley. The needs and fields of action in regards to psycho-social problems are clearly mapped out by the participants. However it also proves to be extremely difficult to develop new initiatives and new strategies in a situation where there is a lack of resources and where priorities are laid elsewhere. External help could offer encouragement and motivation to take up the challenge to develop the structures that are necessary to offer appropriate psychological and medical services to traumatised patients.

Being neutral and not associated with one or another institution, networking among NGOs and the medical establishment can be facilitated by MSF.

MSF can help to build additional local capacity in psycho-social care, through training and psycho-education sessions, by bringing in trainers with experience and knowledge from within and outside India.

MSF can provide support to psycho-educational programs on TV and radio and other means.

MSF can assist in building a network of village health-workers, counselors, knowledgeable general practitioners and expansion of referral possibilities in the valley.

MSF can link up with the medical activities of the GMC at the village level to promote psyho-social programs and mental health.

MSF can provide support to community based research pertaining to mental health problems in the community.
MSF is grateful for the full cooperation extended by the Government Medical College, specifically the Department of Social and Preventive Medicine, Internal Medicine and Psyhiatry for making this seminar possible despite and inspie of the short preparations.
We would also like to mention the cooperation provided by SKIMS -Department of Psychiatry.
MSF hopes to have a further fruitful cooperation in follow up activites regarding health nd psychosocial problems with the GMC, SKIMS, Directorate of Health Services and various other dotors and nonmedical institutions. It has already been suggested that a similar follow-up activity to the seminar be done next year with more planning and preparations.

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Date of Birth : 21-03-1936
Nationality : Indian (Since Birth)
Publications : Research Papers in Indexed Journals -125 Book-5
Chapters in Books -7
Book Reviews -8
Citations received : Over 500 (Including Nature, NIOSH, Gray's Anatomy and in 38 other books)

International Recognition:

Fellowships : Alexander von Hurnboldt Foundation -1971
Royal Microsopical Society, England - 1971
International College of Surgeons - 1972
Memberships : International Brain Research Organisation -1972
Task Force of World Health Organisation, Geneva - 1986
Collegium International ofHigher Nervous Activity, Czechoslovakia - 1987
International Anatomical Nomenclature Committee-1990
International Advisory Board of Neurotoxicology, U.S.A. -1982-1991.

Advisor to W.H.O. from 1983-1984
Chairman : Medical Committee, Indian Red Cross -1990

Invited Guest Lecturers:

New York: NCTR, Jefferson (U.S.A.); Hawai, Chicago; Naples; Trieste; Florence (Itlay); Goettingen; Dusseldorf, Mainz (Germany); Kuwait; Benghazi; Tehran.

Oration: Kamla- B.K. Anand Neuroscience - 1996

Visiting Professorships:

University of Goettingen (Germany) - 1971-1972
University of Benghazi (Libya) - 1981 - 1984
University of Medical Science (Iran) - 1993-1994.

Awards : Dr. Dharam Narayan Gold Medal of the Anatomical Society of India - 1976.
Dr. S.S. Misra Medal of National Academy of Medical Sciences -1976.
Hari Om Ashram Alembic Resarch Award - 1979
Dr. B.C. Roy National Award -1990-91.
Rhone-Polenc Oration Award of Geriatric Society of India-1991.
Ati, Vishisht Chikitsa Medal (Most special Medical Sciences) of College of Chest Physician -1995.

National Recognition

Fellowship : National Academy of Medical Sciences - 1978.
Founder Fellow Indian Academy of Neurosciences -1986.
Indian National Science Academy of Sciences (India) -1992.
Founder Fellow Geriatric Society of India - 1998.

Life Membership:

The Anatomical Society of India (ASI)
Indian Academy of Neurosciences
Electron Microscope Society of India (EMSI)
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Special Recognition:

Member, Governing Body of Indian Council of

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Medical Research -1986-1989.
Member, National Education Policy for Health Sciences of Govt. of India 1986-1990.
Member, expert Committee (Medical) of University Grants Commission 1990 till date.
President, Indian Academy of Nerosciences - 1986
President, The Anatomical Society of India -1988
President, Association of Gerontology (India) 1992-1994.

Prof. Mahdi Hasan has the unique distinction of being the only Indian Scientist to have guided a Commonwealth Research Fellow (Dr. Michael Ibiwoye from Ibadan, Nigeria) who undertook brain research at the Jawahar Lal Nehru Medical College, AMU, Aligarh in 1988).

Dr. Mahdi Hasan's academic and social contributions comprise the main theme of a Malayalam Short Story *"Jeevacchavangal"* (Living Cadaver) by Punathil Kunjabdulla (1972).

The Anatomical Society of India, in recognition of his meritorious contributions for the advancement of teaching and research in clincal anatomy, has Instituted a Gold Medal Award for the best paper presented in Clinical Anatomy at special competitions held during the National Conferences of Anatomical Society of India since 1990.

Positions held at Jawaharlal Nehru Medical College, Aligarh Muslim University Aligarh (India):

Professor & Chairman, Department of Anatomy - 1972-1996.
Director, Interdisciplinary Brain Research Centre - 1981 - 1994.
Medial Superintendent - 1983-1984
Principal & Chief Medical Superintendent -1984-1987
Dean, Student's Welfare 1987-1988
Dean, Faculty of Medicine 1991-1993.

Dr. Mahdi Hassant has to his credit many unique "Firsts". To list only a few.

1. First "M.S. with Honours in Anatomy" in India - 1962.
2. First and only Anatomist to be elected FNA- in the twentieth century.
3. First Indian Anatomist selected for German Academic Exchange Fellowship and Alexander von Humboldt Foundation Fellowship-1965.
4. First Indian Anatomist to publish original work on trans-synaptic atrophy (apoptosis) based on Election Microscopy as early as 1966, before the term apoptosis was coined by Kerr et al. (1972).
5. First Indian Anatomist appointed a Visiting Professor in Germany, who taught brain to German Students in German at Goettingen (Germany) in the Summer Semester of 1972.
6. First Anatomists of India who founded an Interdisciplinary Brain Research Centre in 1976 and was its Founder Director, produced 14 Ph.D's (10 of whom are aborad).
7. First Indian Anatomist to have been conferred Dr. S.S. Misra award by the National Academy of Medical Sciences (India) in 1976.
8. First Indian Anatomist who is a recipient of both Hari Om Ashram Alembic Award for Basic Medical Research and Dr. B.C. Roy National Award in the Category of Eminent Medical Teacher.
9. First Indian to have the honour of selction by the World Health Organization to prepare the Final Draft of the Document on Neurotoxicity Associated with Exposure to Chemicals at two meetings held at Moscow (June 1-7-1983) and Prague (17-21 Sept. 1984).
10. First Anatomist of India to be appointed Chariman of Medical Committee of Red Cross and member of Governing Body of ICMR.
11. First Anatomist to be elected a President of 3 All India Societies/Academy (Anatomical Society of India, (1988), Indian Academy of Neurosciences, 1986 and Association of Gerontology India, (1992) and 2 UP societies (Anat. Soc. of India U.P. chapter 1982 and U.P. Neuroscience Group 1996).
12. First Indian Anatomist whose Academic and Social Contributiosn comprise the main theme of a Malayalam short story titled "Jeevacchavangal" -Living Cadaver, which won Gyanpeeth National Award 1972.
13. The only anatomist to have been appointed chairman of Indian Red Cross Medical Committee.
14. First living Anatomist of India, in recognition of whose meritorious contributions for the Advancement of Teaching and Research in Clinical Anatomy a Gold Medal has been instituted by the Anatomical Society of Indian since 1990.
15. First Indian Anatomist to have received the Ati Vishisht Chikitsa Medal of College of Chest Physicians of Indian in 1995.
16. First Indian Anatomist to receive IMNM-99 Award from World Association of Integrated Medicine Affiliated with World University Benson, Arizona, USA, in November 1999.

THE DECADE OF THE BONE AND JOINT 2000 - 2010*

Professor L Lidgren, MD, PhD, Chairman of the Department of Orthopaedic Surgery began the Decade initiative at Lund University in Sweden. He wanted to determine whether support could be obtained for musculoskeletal disorders by having the years 2000-2010 designated in a way similar to the Decade of the Brain 1990-2000 proclaimed by President Bush in 1990. The Brain campaign generated widespread publicity and went some way towards improving awareness in that regard.

Professor Lidgren was given a planning grant from the Swedish Medical Research Council, and aided by Lund University so that, in 1998, he was able to organize a consensus meeting, which was also co-sponsored by the World Health Organization. The meeting was attended by delegates representing more than fifty professional and patient organizations, as well as numerous scientific journal representatives. The delegates agreed to launch the Bone and Joint Decade at the conclusion of the meeting. In November 1999, the Bone and Joint Decade was welcomed and supported by the United Nations in an announcement made in conjunction with the World Health Organization endorsement. It officially started on January 13 of this year.

The reason for the initiative can be understood in the following way:

Musculoskeletal problems are the most common causes of long-term pain and physical disability affecting hundreds of millions of people throughout the world. In particular, joint diseases are responsible for at least fifty per cent of all chronic conditions in persons who are aged 65 or over. Fractures are increasingly being related to osteoporosis.

There are also other varied problems. For instance, back pain is the second most common cause of time being taken off work (sick leave). Further, more and more, the injuries suffered by populations particularly as a result of traffic injuries or war are producing a commensurate increase in the need for both preventative and restorative procedures.

The basic goals of the Decade are:

Raising awareness of the growing burden of musculoskeletal disorders on society Empowering patients to participate in their own care Promoting cost-effective prevention and treatment Advancing the understanding of musculoskeletal disorders through research to improve methods of prevention and treatment.

A Steering Group composed of representatives of various geographical regions and disciplines is co-ordinating the campaign. An initial focus will be the health-needs assessment for musculoskeletal disorders which will aid in the development of strategies that are relevant to particular geographical, social and economic bearing of those suffering in a given setting.

Already, in Brazil, various Decade-related campaigns have been conducted. For example: the procurement of a national minute of silence last year during Trauma Week (Nov 4-11) to honour victims of violence and trauma; Safe Home 99, which focused on elderly individuals; and a nationwide car accident prevention program emphasizing the use of seat belts which has also helped in creating improved driving laws.

In the last analysis, the Decade must be seen as a framework for local action. In our part of the world Trauma is neglected or seen late. Childrens' deformities, bone and joint sepsis including tuberculosis, are the major preoccupations. Malnutrition and related bone problems are common. Since the Decade campaign is global, it will include initiatives in any geographical location and will try to support activities in developing countries. The Decade should be endorsed by the government of Jammu and Kashmir State followed by professionals, patient organizations, scientific journals and relevant research bodies in consultation with all other stakeholders from all countries and regions.

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EDITORIAL

INEQUALITIES IN HEALTH

Many health care providers and health experts are becoming increasingly concerned about the growing incidence of significant health inequalities between social groups, and, in particular, the strong association between relative deprivation and poor health.

There are many influences on an individual's health, often categorized into biological factors, the physical and social environment, personal lifestyle, and health services. Mutual support within a community can sustain the health of its members in otherwise unfavourable conditions. Without this support, social isolaltion can set in and adversely affect people's health. Overall, there are the economic, cultural, and environmental conditions prevalent in society as a whole. Clearly, factors such as the economic state of a country and labour market conditions have a bearing on living and working conditions, social and community influences, and individual lifestyles. The standard of living achieved in a society can influence an individual's choice of housing, work, and social interactions, as well as eating and draining habits. Whereas some environmental pollution factors are governed by living and working conditions, others are the result of wider structural factors, for example, attitudes to economic growth.

Most influences on health demonstrate a social gradient, the conditions conducive to health becoming less favourable with declining social status. There is, therefore, an uneven distribution of health hazards and risk factors across the population, resulting in groups with lower status, power or income carrying a heavier burden of ill health.

An association between poverty and ill health has long been recognized. It seems likely that cumulative lifetime exposure to health damaging or health promoting physical and social environments is the main explanation for observed variations in health and life expectancy, with health-related social mobility, health damaging or promoting behaviours, use of health services, and genetic or biological factors also contributing.

Policy Responses

Tackling inequalities in health fall into one of four main policy levels:

- strengthening individuals
- strengthening communities
- improving access to essential facilities
- encouraging macro-economic and cultural change.

Each policy level has a distinct aim, ranging from strengthening individuals, through strengthening communities, to the practical public health measures that improve living and working conditions, and finally to macro-economic changes influencing the standard of living achieved in a society.

Strengthening individuals in disadvantaged circumstances, employing person-base strategies are based on the premise that building up a person's knowledge, motivation, competence or skills will enable him/her to alter his/her behaviour in relation to personal risk factors, or to cope better with the stresses and strains imposed by external health hazards from other layers of influence.

Strengthening communities is focused on how people in disadvantaged communities can join together for mutual support, and in so doing strengthen the whole community's defence against health hazards. The community development strategies at this level recognize the intrinsic strengths that families, voluntary organizations and communities can have, over and above the capabilities of individuals working in isolation. These policies recognize the importance to society of social cohesion, as well as the need to create the conditions in deprived neighbourhoods for community dynamics to work.

Improving access to essential facilities and services tackle the physical and psychosocial conditions in which people live and work, ensuring better access to the prerequisites for health: clean water, sanitation, adequate housing, safe and fulfilling employment, safe and nuritious food supplies, essential health care, educational services, and welfare in times of need. Such policies are the responsibility of various sectors, often operating independently of each other but with the potential for cooperation.

Policies aimed at encouraging macro-economic or cultural changes to reduce poverty and the wider adverse effects of inequality on society include the encouragement of cultural values promoting equal opportunities and environmental hazard control on a national and international scale. They tend to span several sectors and work across the population as a whole.

According to the World Bank's World Development Report 1993, advances in income and education have allowed households almost everywhere to improve their health. Marked improvements in health in developing countries are a result of the following:

a. economic growth policies that benefited people living in poverty and preserved cost-effective health expenditure;
b. investments in specified public health measures and essential clinical services;
c. investments in schooling, particularly for girls; and
d. policies that helped promote the rights and status of women, increasing their political and economic power and giving them protection against abuse.

In industrialized countries, having economic policies to reduce poverty may be just as important for public health. There is a strong correlation between more equitable income distribution and improvements in overall life expectancy. The overall health profile of a country may be influenced by inequitable distribution of income. There can be 'healthy' and 'unhealthy' economic policies. The impact of macro-economic policies on the health of the most vulnerable groups in society therefore needs to be monitored carefully. Poverty reduction policies are potentially very important for tackling inequalities in health. These would entail both ameliorating the effects of hardship through adequate social security provision for those who fall into poverty, and attempts to prevent poverty in the long-term.

A strategic approach is potentially important for tackling inequalities in health at different policy levels and from a variety of entry points. This should focus on certain age groups, specific diseases and particular determinants of health, such as living and working conditions, because the differentials are caused by inter-related social and economic factors.

What could be done

Policies designed to equalize access to acute health services would clearly do nothing to tackle the underlying causes of inequalities in health status. They might, however, prove much more cost-effective in tackling the results of deprivation than health promotion programmes which attempt the profound task of changing the unhealthy behaviour of those living in deprived circumstances, or preventive measures of unproven effectiveness. Attention should be focused on the underlying socio-economic inequalities which so greatly contribute to the health status variations which health experts are now seeking to eliminate.

Inequalities in health are avoidable and judged to be unjust and unfair. Equity is concerned with creating more equal opportunities for health and reducing diffentials to the minimum. Societies which have less inequality in income, less variations in housing standards, and better working conditions seem to have less health inequalities between different socio-economic groups.

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HELLP SYNDROME: A REVIEW

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Introduction

The association of hemolysis elevated liver enzymes and low platelet count in the setting of pregnancy was first recognized by Pritchard and associates in 1954[1]. In 1982, Weinstein[2] described 29 cases of severe preeclampsia with the similar features and assigned the acronym HELLP syndrome for the first time. The incidence of HELLP syndrome in preeclampsia patients has been reported to be 4- 12 % depending on the diagnostic criteria used[3]. Maternal mortality in this syndrome may be as high as 25 %[1-5]. Perinatal mortality may also be high, ranging from 10-60 %[6-9]. Hepatic rupture in pregnancy was first reported by Abercrombie in 1884[10] and remains the most life threatening but fortunately rare complications of pregnancy. An estimated incidence of 1 per 4,5000 live births has been reported[11]. Most of the ruptures occur in association with the HELLP syndrome and are associated with high maternal mortality[5,12]. In patients with HELLP syndrome who develop complications, maternal mortality has been reported to be as high as 59 % and fetal mortality up to 62 %[2,5,12-14]. Although the maternal survival has improved over the years, the fetal mortality has continued to be high[15]. The HELLP syndrome occurs in 0.2 to 0.6 % all pregnancies and 4 to 20% patients with severe eclampsia[16]. It is more common in Caucasian women with an average age of onset of 25 years and there appears to be a genetic susceptibility.

Etiology and Pathophysiology

HELLP syndrome is believed to be a complication of severe toxemia of pregnancy, although the exact etiology is not fully appreciated[16]. Vascular endothelial injury appears to play a pivotal role in the etiology[17-19]. The endothelial insult leads to abnormal endothelial reactivity and intravascular deposition of fibrin resulting in vasospasm and hypertension[20-21]. This sequence of events finally leads to end organ damage[20-21]. Platelet activation, abnormal platelet prostacyclin-thromboxane ratio and decreased release of endothelium derived relaxing factor (EDRF) have been reported to play an important role in the pathogenesis of this syndrome[17,20] as have Nitric oxide and compliment activation[17,21-22]. Plasma levels of endothelin, a potent vasoconstrictor, and fibronectin are elevated in patients with HELLP syndrome[18]. Deposition of fibrin, hyaline material and fat in the hepatic sinusoids, periportal areas and parenchyma leads to hepatocellular injury. Recently[23], elevated plasma levels of glutathione S-transferase (1-1 have been reported, suggesting increased free radical generation in the pathogenesis of hepatocellular injury in patients with HELLP syndrome. Similarly, elevated levels of hyaluronic acid, a marker of hepatic sinusoidal dysfunction, have been reported in HELLP syndrome and preeclampsia [24]. Recent evidence has also linked HELLP syndrome with a Factor V (R506 Q) mutation which results in activated protein C resistance[25,26].

The role of disseminated intravascular coagulation has been extensively studied[3,27-31]. Some investigators believe that overt or subclinical disseminated intravascular coagulation may be present in almost all cases of HELLP syndrome and can be detected if sensitive tests of coagulation abnormality are used[18,19,27-29]. In a series of 442 patients with HELLP syndrome, Sibai et al detected laboratory evidence of DIC in 21% [3]. However, definite evidence of disseminated intravascular coagulation is reported only in 7% cases of preeclampsia/ eclampsia and 20-40% cases of the HELLP syndrome[3, 26, 32-33]. Other investigators believe that the presence of frank disseminated intravascular coagulation indicates another complicating condition like Abruptio Placentae, liver hematoma or sepsis[34]. Thus, multifactorial vascular endothelial injury appears to be the fundamental mechanism in the pathogenesis of the HELLP syndrome (Fig.1).

Clinical presentation

HELLP syndrome usually presents in the third trimester (average 32 wks) of gestation. Fifteen percent of patients with HELLP syndrome develop symptoms in the midtrimester, 8% between 17 and 20 weeks of pregnancy and 7% between 20 and 26 weeks of gestation. Thirty percent of patients develop HELLP syndrome in the postpartum period within two days of delivery[3].

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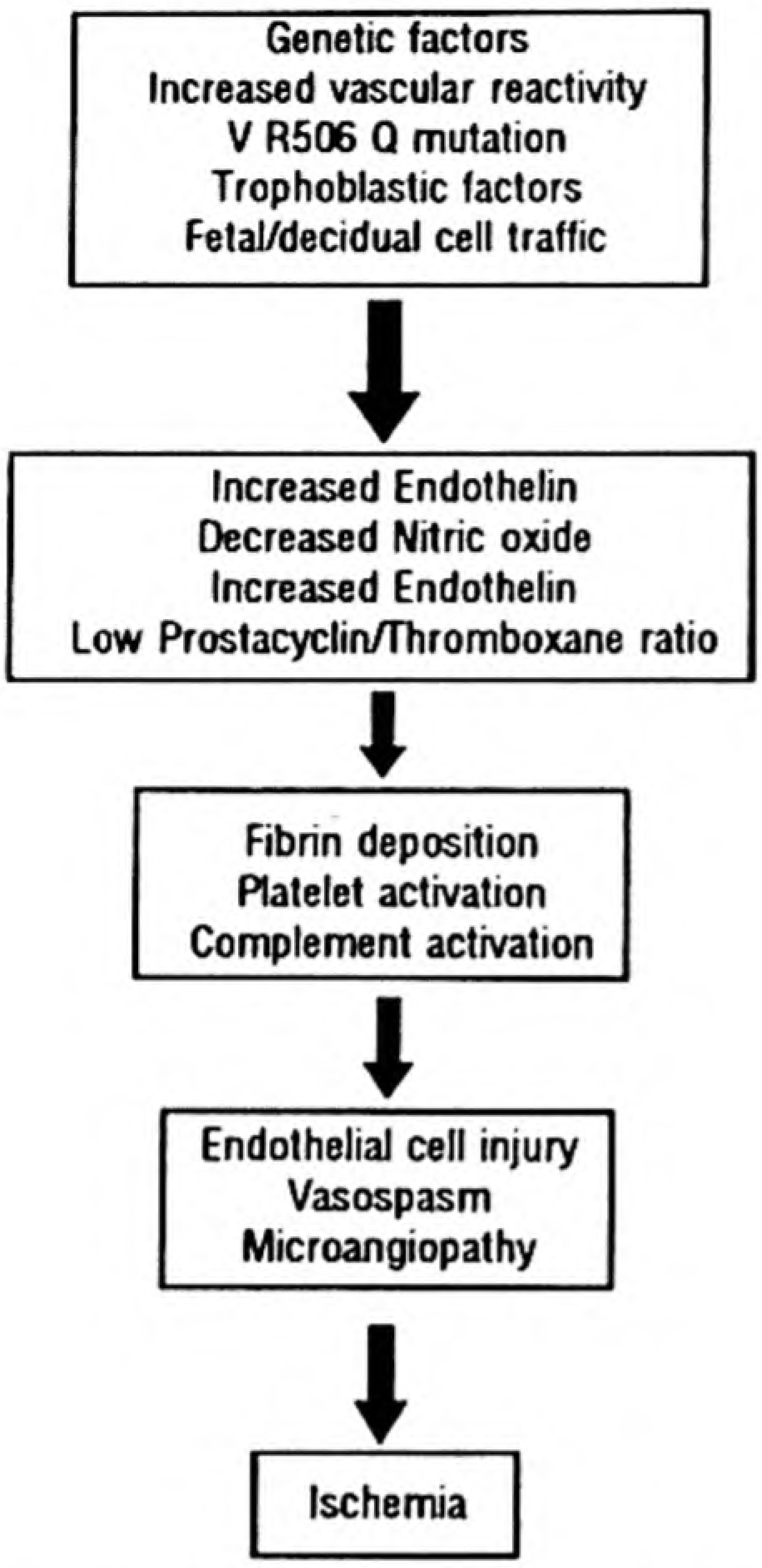
Fig 1. Pathogenesis of HELLP syndrome



Compiled from references 3, 16- 26, 29, 35

HELLP syndrome is more common in white and multiparous women. The clinical features are summarized in Table 1.

Classification

Two classifications have been proposed for the HELLP syndrome Table 2[18,19,34-35]. The Mississippi classification categorizes the HELLP syndrome into three classes according to the severity of thrombocytopenia. The Tennessee classification defines HELLP syndrome as Complete and Incomplete depending on the number of clinical criteria present. Evidence of hemolysis and hepatic dysfunction are prerequisites for both classifications. Patients with Class I and Complete HELLP syndrome have the highest maternal and perinatal mortality and morbidity and protracted postpartum recovery periods[18,19,34-35].

Diagnosis

A diagnosis of HELLP syndrome is suggested by the presence of above mentioned symptoms and signs together with microangiopathic hemolytic anemia, thrombocytopenia and elevated serum aminotransferases[36]. Platelet counts as low as 6, 000/ mm3 and aminotransferases levels as high as 4,000/ mm3 have been reported[37]. Abnormalities in the peripheral blood smear are highly sensitive but nonspecific indicators in the diagnosis of HELLP syndrome. These abnormalities are the result of red cell injury from the microangiopathy and include the appearance of echinocytes (speculated cells), schizocytes and helmet cells (fragmented cells) and spherostomatocytes. These morphological abnormalities in the peripheral smear correlate with the severity of hemolysis and elevated lactic dehydrogenase levels[11]. Prothrombin time (PT) and partial thromboplastin time (PTT) tend to be relatively normal in HELLP syndrome.

Recently[23], plasma levels of glutathione S-transferase (1-1 have been proposed as sensitive marker of hepatocellular injury in patients with HELLP syndrome. Similarly, elevated levels of hyaluronic acid, a marker of hepatic sinusoidal dysfunction, have been reported in HELLP syndrome and preeclampsia[24]. The utility of these interesting markers in the management of HELLP syndrome needs further investigations. Most of the laboratory abnormalities return to normal within 5 days of delivery and hypertension and proteinuria typically resolve within in 3 months following delivery[11]. Laboratory abnormalities do not generally correlate with the severity of histopathological changes in HELLP syndrome [38].

TABLE 1. CLINICAL FEATURES OF HELLP SYNDROME

Features	Average value (Range)
Maternal age	25 yrs (range 14-40)
Gestational age	32 wks (23-40)
Generalized malaise and fatigue	90%
Epigastric/ right upper quadrant pain	65-90%
Nausea and vomiting	36-50%
Jaundice	5%
Headache	31-57%
Hepatic tenderness	80-100%
Ascites(transudative)	10%
Edema	60%
Hypertension	80-92%
Proteinuria	83%

Compiled from references 3, 9, 18, 19, 28, 36, 40-42

Some investigators have used the terms "incomplete" or "partial" HELLP syndrome when patients with severe toxemia of pregnancy have isolated thrombocytopenia or liver function abnormalities[37]. Martin et al[39], have demonstrated that platelet count is an important prognostic marker and that patients with lowest platelet counts have highest maternal morbidity. About a third of patients with the HELLP syndrome may present in the postpartum period[36,37]. Diagnosis in these cases may be delayed because medical vigilance is generally low in this period[34]. Postpartum HELLP syndrome is associated with a higher incidence of renal failure and pulmonary edema[3] and worse prognosis[3,18,19,34,35,40]. HELLP syndrome has also been described without hemolysis[9] and without toxemia of pregnancy[3, 35].

TABLE 2. CLASSIFICATION OF HELLP SYNDROME

A. **Mississippi 3- Class System**
Class I
LDH (600 IU/L
AST and/or ALT (40 IU/L
Platelet count (50,000/mm3
Class II
LDH (600 IU/L
AST and/or ALT (40 IU/L
Platelet count (50, 000 to (100,000/mm3
Class III
LDH (600 IU/L
AST and/or ALT (40 IU/L
Platelet count (100,000/mm3
B. **Tennesse Classification System**
LDH (600 IU/L
AST and/or ALT (70 IU/L
Platelet count < 100,000/mm3
Complete, if all of the above present and Incomplete, if one or two of the above present.

Compiled from references 3, 4, 18, 19, 34, 35

Complications Of HELLP syndrome

Major complications of the HELLP syndrome are described in Table 3[3,9,17-19,41-43]. Ascitis and pleural effusions have also been reported[17,41-42]. Spontaneous hepatic hematoma and rupture are fortunately rare[11,43]. Sibai et al reported pulmonary edema in 6% and hepatic hematoma and retinal detachment in 0.9% of patients with HELLP syndrome[3].

Spontaneous intrahepatic hemorrhage occurs in about 1-2 % cases of preeclampsia/ eclampsia[43-45] and histological evidence of preeclampsia is present in 92 % cases of intrahepatic hemorrhage[36]. Since the original description by Abercrombie[10] more than hundred cases have been reported in the English literature[1, 5, 37]. Hemorrhage occurs typically in the third trimester of pregnancy but it can occur in the first or second trimester or within 48 hours of delivery[36]. A subgroup of patients with the HELLP syndrome who are older (average 32 yrs), multiparous and have proteinuria and edema seem to be particularly at risk of intrahepatic hemorrhage. CT scan is most valuable in the diagnosis. It is easily available and quick and has the advantage of allowing excellent visualization of other intra-abdominal organs. Although surgical intervention is often required, some patients may be managed conservatively particularly if the liver capsule is intact[43, 46-51]. Barton et al[52] and Smith et al[11] proposed an algorithm for management of intrahepatic hemorrhage. They suggested close monitoring of patients with intact liver capsule with serial ultrasound or CT scan in addition to correction of coagulopathy.

Maternal and Fetal outcomes

A maternal mortality of 1- 25%[3] and a perinatal mortality of 10-60 % (average 35 %) have been reported in the HELLP syndrome[8, 18-19]. Maternal morbidity and mortality are related to complications like acute renal failure, intrahepatic hemorrhage and pulmonary edema. Most of the perinatal mortality is from placental abruption, asphyxia and prematurity. The recurrence of HELLP syndrome in subsequent pregnancies has been reported to be 3 to 27%[53-54].

Differential Diagnosis

The clinical picture of HELLP syndrome can be confused with systemic vsculitic disorders like systemic lupus erythematosus, thrombotic thrombocytopenic purpura and acute fatty liver of pregnancy. HELLP syndrome may also present as acute abdomen and must be differentiated from acute gall bladder disease, appendicitis, pyelonephritis, peptic ulcer disease and Budd-Chiari syndrome. Drug induced and other acute hepatitis and cholestatic disease must be considered in the differential diagnosis. Appropriate clinical setting, relevant laboratory investigations and abdominal imaging studies like CT scan and ultrasound are helpful in arriving at the proper diagnosis[18-19].

TABLE 3. COMPLICATIONS OF HELLP SYNDROME

DIC	20%
Abruptio placentae	16%
Acute renal failure	7%
Pulmonary edema	6%
Hepatic hemorrhage/ rupture	<1%
Retinal detachment	<1%

Compiled from references 3, 9, 17-19, 41-43

Management

Careful fetal and maternal monitoring is crucial in the management of these patients. Supportive treatment in the form of blood and blood products has an important role in correcting the laboratory abnormalities[3]. Hypertension is controlled using hydralazine or labetalol. Magnesium sulfate is recommended for seizure prophylaxis irrespective of the presence of hypertension[18-19]. Delivery is the definitive treatment for the HELLP syndrome. The management of women with onset of HELLP syndrome prior to 34 weeks of gestation is controversial[9]. Postponing delivery for 24 to 48 hours with adequate control of blood pressure and careful monitoring may allow administration of steroids to promote fetal lung maturity[37]. Steroid administration before and after delivery has been shown to increase platelet counts, improve liver function and improve fetal outcome[6, 55-56]. Regional and pudendal block should be avoided in patients with coagulopathy. Labor can be induced after 32 weeks of gestation. Cesarean delivery should be considered as prolonged labor is anticipated in most of the patients. Platelet counts should be maintained above 20, 000/ mm3, in patients undergoing vaginal delivery and above 50, 000/ mm3 if a cesarean section is anticipated. Intensive monitoring should be continued for 48 hours after delivery[18-19]

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SURFACTANT REPLACEMENT THERAPY

Ghulam Nabi M.D

Neonatal mortality due to respiratory distress syndrome has significantly declined after the advent of surfactant therapy. Administration of surfactant in RDS decreases morbidity and mortality[1]. Pulmonary surfactant is a lipoprotein substance that lines the lungs and helps reduce surface tension. Surfactant associated protein A (SP-A) is the most abundant non serum protein in pulmonary surfacant. This complex glycoprotein aids in the synthesis, secretion and recycling of surfactant phospholipids. Recent evidence has highlighted the role of SP-A in the innate immune system present in the lung. SP-A may play a major role in defense against pathogens by interacting with both injectious agents and the immune system.

Factors that affect fetal lung maturation e.g., gestational age and hormones regulate SP-A gene expression. Moderators of immune function also regulate SP-A levels. A number of lung disorders, including infectious diseases and respiratory distress syndrome are associated with abnormal alveolar SP-A levels. SP-A can no longer be called a lung specific protein since it has recently been detected in other tissue. In most species, SP-A is encoded by a single gene, however in humans it is encoded by two very similar genes. Models for the structure of the human SP-A protein molecule have been proposed, suggesting that the mature alveolar SP-A molecule is composed of both gene products. The study of SP-A may provide information helpful in understanding disease processes and formulating new treatment modalities[2].

Prevention of respiratory distress syndrome (RDS) is best achieved with prevention or effective treatment of preterm labor, failing which antenatal cortocosteroid therapy is the next most efficacious intervention. Post natal prevention of RDS is the remaining option after the above measures have been taken. The use of surfactant therapy is an important component of clinical practice with in the neonatal intensive care unit for the management of RDS.

History & types of Surfactant:

Natural surfactant derived from animal lungs improved lung function and prevented respiratory distress in prematurely delivered animals, the study was published in 1970.

In 1980, the first successful human study was published showing that surfactant replacement therapy improved oxygenation, ventilatory requirements, X-ray abnormalities, acidosis and hypotension in 10 preterm infants with RDS[3].

Surfactants are of two general classes, natural and synthetic surfactants. Natural surfactants are either heterologous (from minced bovine lung tissue, e.g, suvanta or extracted from saline lavage fluid of calf lungs, e.g. infasurf or from porcine sources, e.g. Curosurf) or homologous (human amniotic fluid from term pregnancies). Some are modified by addition of difotntoyl phosphotidylcholine, palmatic acid and triglyceride (Survanta) or by removal of neutral lipids by chromatography (curosurf) to improve the surface properties of the extract. Synthetic surfactants (e.g Exosurf) contain difotntoyl phosphotidylcholine, the main surface active phospholipid of surfactant and other components which facilitate surface absorption. Natural surfactants contain hydrophobic surfactant protein (SP) B and C which aid in surfactant absorption and resist surfactant inactivation[4]. The main structural properties of these proteins have been clarified which makes it possible to design synthetic analogues for use in synthetic surfactants[5].

Clinical effects of surfactant therapy:

More than 50 randomized clinical traits have been published so far. First surfactants replacement therapy was published in 1984. These showed that by decreasing the need for oxygen and ventilatory support, pneumothorax and mortality rates were reduced. Two observational studies, each involving over 4000-5000 infants weighting <15000 gm. In 8 and 14 US centres respectively over a 3-5 years period, reported a 30% reduction in mortality after surfactant was introduced[6,7]. These studies estimated that 50-80% of the largest drop in national infant mortality observed in 20 years in the USA.

Surfactant therapy, by improving cardiorespiratory stability and oxygenation, should theorectically reduce non-pulmonary complications of prematurity such as

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intraventricular hemorrhage (IVH), necroticing enterocolitis and retinopathy of prematurity (ROP). However, published clinical traits have not consistently reported such benefits.

Although a greater poportion of preterm infants are surviving with surfactant therapy, the risk of ROP among the survivors was lower than control infants[8,9]. There was no difference in their prevalence of neurodevelopment disability, growth retardation and late respiratory or allergic disease[10,11]. Except in some developing countries, surfactant therapy has become routine in neonatal intensive care units.

Method of administration:

Surfactant is delivered as a bolus directly into the lungs through an endotracheal tube over a 15 minutes period, either via a catheter inserted into the endotracheal tube in 2-4 aliquots after disconnecting the infant from the ventilator or into the sideport on the endotracheal tube adaptor without the need or removing the infant from the ventilator. Alternatively surfactant can be delivered via a catheter inserted into the endotracheal tube via a side port in the ventilator circuit adjacent to the endotraheal adaptor ventilator. Infants who remained connected to the ventilator during surfactant installation have been shown to experience less oxygen desaturation compared to those who were disconnected[12].

The effect of maintaining a positive end expiratory pressure during surfactant installation has also been shown to result in more homogenous dustribution of surfactant with in the lungs[13].

Keeping the chest of the infant in horizontal position may result in the most even distribution of the surfactant in the two lungs[14]. A transient increase in the peak inspiratory pressure is believed to overcome acute airway obstruction and minimize cardiorespiratory disturbance.

Surfactant has been administered intraamniotically to four human fetuses in utero with immature amniotic fluid indices[15]. After birth all the infants had an eventful clinical course without respiratory distress.

Prophylaxtic versus rescue therapy:

Surfactant can be given as prophylactic therapy at or within two hours of birth to those infants at risk of developing RDS. As rescue therapy, given only when the diagnosis of severe RDS could be accurately made, usually at 3-6 hours after birth. Incidence of pneumothorax and mortality was less in prophylactic as compared to rescue therapy[16,17].

It has been recommended that all infants less than 32 weeks gestation should be treated with surfactant as soon as they are intubated[18]. Delaying treatment until the infants have established RDS reduce the efficacy of surfactant therapy.

Surfactant dose and response:

The surfactant dose is based empirically on animal experiments[19]. In term new born animals, the surfactant pool is about 100 mg/kg which is the usual dose used in surfactant therapy. Exogenous surfactant does not inhibit the synthesis and secretion of endogenous surfactant. Treatment regime which permits upto four doses has no additional benefit compared to a two dose surfactant, resulted in a decrease in oxygen and ventilatory requirements, pneunothorax and mortality[21]. Synthetic surfactant have a delayed and modest effect 12-18 hours after administration. Oxygenation and lung function improves sooner and to a greater extent after natural surfactant[22].

Poor response to surfactant is associated with:

a) Severe RDS b) Perinatal Asphyxia. c) Infection
d) Early PDA e) Pulmonary interstitial emphysema.
f) Pneumothorax g) Excessive fluid and colloid intake.

Cost implication:

The cost effectiveness of surfactant therapy depends on the price of surfactant and whether it is used in large or small preterm infants. In the large infants, surfactant therapy reduces medical cost because it shortens the duration of assisted ventilation and decreases the complications of RDS. In the smaller infants their increased survival rate prolongs the need for neonatal intensive care among additional surviver and increase overall meldical cost[23].

Surfactant for other indications:

1. Term infants with meconium aspiration syndrome with respiratory failure.
2. Pneumonia and adult type of acute respiratory distress syndrome.
3. Respiratory failure from bacterial sepsis.

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LEPTOSPIROSIS - AN EMERGING ENVIRONMENTALLY ACQUIRED INFECTION

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Introduction:

Leptospirosis is a zoonotic disease of worldwise distribution caused by a spirochaete belonging to the leptospira intrrogans complex[1-3]. It affects a large variety of animal species, almost all of them can spread the disease to human populations. The disease is responsible for protean clinical manifestations like pyrexia of unknown origin, hemorrhagic suyndromes and renal failure. Man can get infected either through direct contact with infected animals or through an environment contaminated with the infected urine of animals, this second mode being more important in the causation of a vast majority of infections. The disease has been known by many names in the past: mud fever, swamp fever, sugar cane fever, rice field fever, canicola fever and Weil's disease[1].

Indian Scenario:

Leptospirosis had never been considered as a disease of public health importance in India probably because of the rarity of case reports and therefore, lack of surveillance. Reference to the disease was limited to a few lines on Weil's disease caused by the spirochaete 'leptospira icterohemorrhagica'. In recent years happenings in the public health field have incited a rethinking on the role of leptospires in causing disease in the country. Epidemics of PUO were reported from different parts of India viz., Andaman Islands (where it is locally knoiwn as Andaman hemorrhagic fever)[5-6], Chennai and other areas of Tamil Nadu[7], Surat in Gujarat, Kerala, Nagpur in the the west and the north eastern region[8-9]. Recently an outbreak occured during the post-cyclone period has been reported from Orissa[10]. Identification of leptospires as the cause of outbreak has necessitated a search for the origanism in these areas and results indicate that it is a major source of morbidity and mortality[8]. Since no search has been made in the rest of the country, the overall role of this organism in causing human disease remains unestimated.

Three factors are critical for leptospiral endemicity. These are presence of a reservoir or carrier host, an environment favourable for the survival of leptospires and unprotected exposure of the population to the contaminated environment[11]. We are well aware that in a developing country like ours, all these factors in one form or the other are present among population groups. Recognising the epidemic potentials of leptospirosis, the WHO and later the Government of India have listed it as an emerging infectious disease requiring active surveillance[11].

In spite of all these indicators of its public health importance, no data of the disease burden exists in the country although different reports quote different prevalence rates and seropositivity in asymptomatics has been shown to vary from 16 to 33%[12]. The first case was reported from the Andaman Islands in 1930. After this nothing was heard about the disease for more than 50 years. During the 1980s reports of human leptospirosis started appearing from various places in India. Judging from these reports the disease is becoming more the common. It is now known to occur in South India, West Bengal, Assam and other Easter States, Bihar, UP, Delhi, Maharashtra and Gujarat besides the Andaman Islands[5-9].

Severe clinical and fatal forms are now appearing. In the Andamans the clinical presentation has shifted from the renal form in the early 1930s to the pulmonary form in the 1980s. This form is characterized by hemorrhagic pneumonitis and adult respiratory distress syndrome[11-12]. It has also been recognised as a common cause of acute renal failure (ARF) in South India[7], ranking second among the etiological factors of ARF in several centres and is especially common during the following monsoon rains. It has also been reported to cause uveitis[13]. The incidence in cases of PUO with jaundice in Bangalore was reported as 6% in 1986[14]. All this evidence indicates that leptospirosis is emerging as an important public health problem in India.

Etiology:

Leptospires were first observed and described by Stimson in 1907[15]. They are fine, coiled, spiral shaped bacteria with a characteristic morphology which can be seen by dark field, phase contrast, fluorescent and electron microscopes. The spirochaete is 6 to 20 um x 0.1um, too

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thin to be seen under the ligh microscope but can be stained with silver impregnation techniques[16]. Unlike other spirochaetes it is readily cultivated in artificial media. The genus leptospira was created by Noguchi in 1918 and belongs to the family spirochaetaceae[17]. It is divided into two species: L bireflexa (saprophytic and free living) and L interrogans (parasitic and potentially pathogenic. Currently there are 250 serovars antigenically arranged into 26 major serogroups within the strain leptospira interrogans[7,18-19]. Serotypes found most commonly in human infection include canicola, icterohemorrhagica, pomona, autumnalis, grippotyphosa, hebdominis, ballen and australis[5,19-20].

Transmission and Pathogenesis:

Infected animals (rats, dogs, etc.,) carry the leptospires in the tubules of their kidneys and shed the organisms in their urine. Man becomes infected through contact directly with urine or indirectly through contact with contaminated water, soil, mud, etc. Water, particularly stagnant and slow-moving water in temperate climates is one of the important agents for transmission. The organisms can gain entry into the human body through intact mucous membranes of nose, throat and conjuctiva or abraded skin or fresh cuts in the skin[7]. They multiply in the blood stream and get localised in various organs of the body including the liver, kidneys and can even reach the crebrospinal fluid, Hyaluronidase and/or burrowing motility of the organisms have been suggested as mechanisms by which leptospires reach these normally protected sites[20a].

Pathogenic spirochaetes require moist, warm (25°C) environmental conditions and a pH value about 7 for optimum conditions for survival. In these conditions, leptospires can survive for months in warm, muddy waters.

Clinical Features:

Persons exposed to infectious animals may have a subclinical infection. Full blown leptospirosis is characterised by fever, myalgias, conjunctival suffusion and headache with any of the following: jaundice, oliguria, cough with hemoptysis, hemorrhagic tendencies due to vasculities, meningeal irritation and circulatory collapse[20-22]. Milder, aniceteric febrile illness is seen in 90% patients. This is a flu-like illness with a prolonged 8-10 weeks) recovery. Severe forms with jaundice are seen in 5-10% cases[19]. There is a high incidence of renal failure ranging from 28 to 40 per cent[7,23,24]. The disease is often mistaken for malaria, yellow fever, viral hepatitis and other bacterial fevers. Pulmonary involvement with inflates, cough blood stained sputum and chest pain have been reported in 20-70% patients in recent series[25].

There are two distinct phases of leptospirosis. The first is a leptospiraemia and the second leptospiruria. The first phase corresponds to the incubation period and varies between 2 to 20 days with subsequent spread to the tissues and organs. In most tissues the organisms are eradicated and the tissue returns to normal. The kidney is one organ which retains leptospires where they multiply producing renal failure. Renal function abnormalities may be profound and out of proportion to histologic changes seen in the kidney[22]. Intact leptospires can be demonstrated in early stages of the illness. Leptospiral antigens have been demonstrated in the kidney in late stages. The organisms persist for months in the urine even after clinical cure has been achieved[1]. Renal failure is due to tubular damage and leptospires may be seen in tubular lumina. Immune-complex glomerulonephritis may also occur.[26]

Jaundice occurs in severe cases due to hepatocellular dysfunction usually without necrosis[22]. Hepatic damage is subcellular and leptospires are rarely seen in the liver. The mortality rate for leptospirosis with severe jaundice may be as high as 20%.

Leptospires may persist for months in aqueous humour and cause chronic and recurrent uvitis.[27]

During the first week of infection the organisms may be readily found in the cerebrospinal fluid (CSF) but meningitis develops when serum antibody appears and leptospires are no longer found in the CSF. This has led to the suggestion of meningitis due to an antigen antibody reaction[19]. The Centres for Disease Control, Atlanta has demonstrated serologic evidence of leptospiral infection in approximately 10% cases of previously unexplained meningitis or encephalitis[20].

Laboratory Diagnosis:

The definite diagnosis of leptospirosis can be performed only in the laboratory. Current lab criteria for definite diagnosis at CDC are: i) isolation of the organism from any clinical specimen; ii) fourfold or greater increase in agglutination titres between acute and convalscent phase serums obtained two weeks apart; and iii) demonstration by immunohistochemistry or immunofluorescence[27a]. Since many laboratories have little experience in the diagnosis of leptospirosis, it is desirable to have the studies carried out in a lab familiar with the ncessary techniques. The organism can be demonstrated by silver impregnation stains, immunofluorescence and immunohistochemistry in tissue sections.

Serology is an important tool for the diagnosis from the moment antibodies appear in the blood. There are many established serological methods:

1. **Microscopic Agglutination Test (MAT): is the gold standard for serodiagnosis of leptospirosis[18,26a]. It is a**

sero var specific test with unsurpassed specificity. It uses live or formalised leptospires as antigens. The test is performed using a battery of leptospiral antigens, the agglutination being read by a dark ground microscope. MAT antibodies at a titre of 00 or more in a single species may be considered diagnostic.[3,29]

2. **Macroscopic agglutination test** is less labour intensive but also less sensitive and specific.[29a]
3. **Complement Fixation Test** is a genus specific test for routine screening.
4. **Enzyme-linked immunoscorbent assav (ELISA)** is a genus specific test and detects early IgM antibody within 5 to 6 days of infection.
5. **Leptodipstick Method:** has been developed by the Dutch[30]. It is based on the binding of leptospira - specific IgM antibodies to the leptospira antigen. Bound IgM antibodies are detected with an antihuman dye conjugate.

Cultural MEthods:

Various body fluids like blood, urine, CSF can be used for culture on EMJH medium with or without selective agent 5 fluoruracil[28]. Organisms can be isolated from the blood or CSF during the first ten days of illness and from the urine after ten days. Other media are Fletchers medium and Tween 80 albumin media. The cultures are incubated for 5 to 6 weeks at 28-30°C as leptospires take a long time to grow. Although isolation of leptospires from patients is rarely attempted, effort should be made more often because only by isolating the organism, the infecting serotype an be accurately identified. This is important to find out which serotypes are frequent causes of human and animal infections in a given locality and also to detect an epidemiological connection among infections acquired through exposure to a common source.

Animal Inoculation;

Studies can be done by intraperitoneal inoculation of clinical material in guinea pigs and hamsters.

Polymerase Chain Reaction is a never technique in molecular biology. It can deect as less as ten organisms.[31,32]

Epidemiology:

The natural reservior of leptospirosis is wild animals particularly rodents. Domestic animals may also become infected either by contact with infected urine or diretly with serovar groups specific for their species. The epidemiology of human infection in a particular time and place is determined by the nature of human contact both direct and indirect with infected animals. The human is usually a dead end host, person to person transmission is rare[19].

Occupations at special risk are people working in moist environments, sewer cleaners, abbatoir workers, farmers, rice-field workers, sugar-cane planters, cutters, miners, water and ditch workers. Abbatoir workers have a 15% evidence of seropositivity[19]. Any environment which is moist and rat infested is a special risk area. Control depends upon the control of rodent population.

At least two epidemiological features make effective control of the disease extremely difficult. 1) leptospires can establish a symbiotic relationship with many animal hosts persisting for long periods in the renal tubules (with excretion in the urine) without producing disease[21]. 2) Wild animals represent an important reservoir for continually reinfecting populations of domestic animals.

Management and Prevention:

The primary aim in clinical management is to prevent the organisms from invading the tissues particularly the kidneys. The principle of the treatment is the same irrespective of the infecting serogroup namely early adminsitration of antibiotics, maintenance of water and electrolyte balance and supporting renal and cardiac function.

High doses of penicillin at least 6 gms daily are given parenterally[33]. Alternatively if the patient is hypersensitive to penicillin then tetracycline 500mg followed by 250mg 8 hourly intravenously for 24 hours and 500mg 6 hourly for 10days[34]. Or erythromycin 500mg initially followed by 250mg 6 hourly for ten days can be given. Preexposure prophylaxis of doxycycline (200mg weekly)is given to soldiers and others on short term jungle exposure[35-36,41].

Leptospirosis is a notifiable disease in most developed countries. Adequate guidelines have been drawn by the WHO[3,37]. Prophylactic measures include general awareness of the risks involved, personal hygiene and proper rodent control[3].

Thus leptospirosis is emerging as an important public health problem and can no longer be ignored while setting. National Health priorities. Early detection and treatment is needed to reduce the morbidity and mortality.

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ORIGINAL ARTICLE

HUMAN [illegible]

[illegible]

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INTRODUCTION

[illegible] Brucella [illegible]

MATERIALS & METHODS

[illegible]

Table 2: Occupation and risk factors in brucellosis patients in Najran.

Occupation	Number	%	Risk Factors	Number	%
Housewives	189	46	Raw milk/milk product ingestion	185	45
Farmers(males)	82	20	Milking livestock	140	34
Office workers/ Businessmen	70	17	Animal contact	123	30
Students	41	10	Placental contact	41	10
Teachers (females)	16	4	Contact with brucellosis patient	26	6
Domestic helpers(females)	12	3	No apparent contact	112	27
Animal dealers	2	0 5			

DISCUSSION

Brucellosis is one of the commonest zoonosis in the world. It is a major health care problem in rural and urban Saudi Arabia[1] as well as in the Gulf countries[2]. It is considered to be endemic in the Kingdom. Brucellosis has been reported in 85 per 100,000 population in some Gulf countries as compared to 0.1 per 100,000 population in the USA. Brucellosis is a multi-system disease[3] and many patients present with fever. In fact it was found to be one of the most important cause of pyrexia in Saudi Arabia[1]. Dangerous complication like neurobrucellosis and endocarditis are uncommon presentations of brucellosis. Around 2% of all neurologic admission in a university hospital in Riyadh were because of neurobrucellosis[5].

In our study brucellosis patients showed a female preponderance. We believe it is related to the social structure in this area. Here majority of females are housewives and so remain busy with home affairs. This involves taking care of the animals, milking them, and helping in animal parturition. Males in Najran have taken to business and government jobs and so are less intimately involved in care of animals. We found a significant number of brucella cases in expatriates working as farmers (males) and domestic helpers (females). Majority of our cases were between age range of 20-45 years.The possible reasons are that this age group is more commonly involved in animal care .

The three commonest symptoms encountered were general aches and pains/feeling of being unwell/fatigue (96%), low backache (87%) and arthralgia (67%). Madkour et al[1] had reported fever (100%), lethargy (100%) and arthralgia/backache(64%) as the commonest symptoms. Clinical suspicion is based on these symptoms. Only 44% of our patients had fever. Headache was seen in 54% of our cases. The patient would complain of this symptom and catch the top of his head with extended fingers of his hand (crown pain). We observed that this symptom was more specific in diagnosing brucella cases. Hepatomegaly and splenomegaly were seen with similar frequency as that reported by Madkour[1]. We did not find any patient with lymphadenopathy and arthritis in our series. Besides the serological evidence of brucellosis, we found leucopenia, thrombocytopenia and raised liver enzymes with normal bilirubin in many patients of brucellosis.Haematological complications are thought to be due to bone marrow suppression, cytophagocytosis, release defect in cells,as well as peripheral destruction and hypersplenism .Raised liver enzymes are due to subclinical hepatitis.

There are no clear cut dividing lines between rural or urban areas in Najran. This is so because Najran itself is a semi-urban city and many people here possess big farms and livestock. Not only that, the periphery of this province is sparsely populated. So we could not come to a clear conclusion between the distribution of cases in rural and urban populations. Most of our cases are those referred from primary health centers where doctors seem to have a heightened awareness of this disease. Therefore cases are picked up at an early stage and so complications like neurobrucellosis and endocarditis were not encountered in our study.

The commonest group of patients was housewives and farmers. Most of our patients had a history of raw milk ingestion or close contact with sheep, goats, camels, or contact with infected family members. Many of these patients gave history of milking the animals without any gloves, handling placenta during parturition of animals as also history of eating partially cooked meat.. We have seen people of all age groups suffering from this disease. Teachers, clerks, policemen, students, doctors and nurses have all presented with brucellosis. Although the transmission is from infected animals to humans, we have come across many patients who deny any animal contact. In fact a significant proportion of patients (27%) had no history of consumption of milk and milk products and many, including students, teachers, office workers and businessmen had no apparent animal exposure. The possible reason is contact with an infected patient or acquisition by inhalation[6] or remote contact, which they might have forgotten. We suspect that brucellosis has an intra-familial mode of spread besides the other established routes.. Interestingly we did not find many butchers, abattoir workers, meat sellers or veterinarians in our study. We believe that brucellosis is a food borne disease here rather than an occupational disease. Similar observations have previously been reported from California[7].

The incidence of brucellosis diagnosed in King Khalid University Hospital, Riyadh, has declined fivefold over a seven-year period from 8.6 cases/1000 admissions in 1985 to 1.4 cases/1000 admissions in 1991[8]. However, brucellosis is still being reported from all parts of Saudi Arabia and it continues to be one of the most common specific infections diagnosed in our hospital. As has been seen in Kuwait, reduction of animal brucellosis results in a corresponding decrease in human cases[9]. So until brucellosis is controlled in animals, human brucellosis would continue to be a major health problem in the Kingdom.

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METASTATIC CARCINOMAS OF BONE MARROW IN KASHMIR

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***Abstract:** In an attempt to work out the pattern of metastasis of carcinoma cells in the bone marrow in Kashmir Valley 15 cases of metastatic carcinoma were analysed. They included 6 cases (40 per cent) from primaries in gastrointestinal tract, 3 cases (20 percent) each from breast and prostate, 2 cases (13 percent) from thyroid and 1 case (7 percent) from lungs. Anaemia was the main clinical presentation in 14 cases and acute bone pain in one case.*

***Key words:** Metastatic deposits, Malgnant tumours, Bone Marrow.*

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Introduction:

As early as in 1935 Reich[1] observed that metastatic cells could appear in the bone marrow aspirates. These findings were confirmed only a year later by other investigators[2]. Today we know that infiltration of bone marrow by tumour cells from solid tumours is second in frequency only to leukemia/lymphoma as a cause of Myelophthistic anaemia[3]. The most common primary sites involved include prostate, breast, lungs and stomach[3]. Often, particularly with stomach cancer, the metastasizing tumour cells orginate from smallo primary lesions detected only on autopsy[4].

Material and Methods:

The material for the present study was obtained from the field records of haematology section of the Department of Pathology, Government Medical College, Srinagar and Private Clinic of one of he authors. 12 cases of metastatic carcinoma of marrow were reported in the department of Pathology from Ist January 1992 to 30th June 2000 and 3 cases in a private clinic of one of the authors (Chowdhary). The slides of all these cases were reviewed and diagnosis was reconfirmed. The clinical details of these patients were submited by the referring clinicians. The marrows were aspirated by us (Chowdhary). In 13 cases sternum was used as the site of aspiration where as in 2 cases, posterior iliac crest was the site of aspiration. The smears were subsequently stained by Lieshmin's stain and perls' reaction for iron stores (Routine stain used in anaemic patients).

Observations;

Of the total 15 cases of metastatic carcinoma of bone marrow analysed, 9 were males and 6 females (3:2). Their age varied from 26 years to 75 years. 26 year old female had metastatic deposits of duct cell carcinoma in bone. She clinically presented with acute bone pain wi anaemia and was provisionally diagnosed as a case Acute osteomyelits. Bone marrow aspiration reveale desposits of duct cell carcinoma with primar retrospectively detected in (Rt) Lactating breast. Th oldest patient a 75 year old male, had deposits of prosta adenocarcinoma in the marrow. He clinically presen with progressive anaemia with low backache and X-ra revealed a lytic lesion inolving lumbar vertabrae. He wa provisionally diagnosed as a case of Multiple Myelo but marrow showed deposits of adenocarcinoma prosta In one case, each of carcinoma breast and thyroid whic metastasised to marrow, malignancy was suspected befo marrow aspiration. In the rest of the cases (i.e. 11 case there was no suspicion of non-hematological malignanc They mainly presented with anaemia. In order to type t anaemia, bone marrows were aspirated which showe Myelophthisic type of anaemia.

Discussion:

Bone marrow provides a receptive bed for seedling blood born tumour cells. These large sticky cells lod indiscriminately throughout the microvasculature bu marrow parenchyma, the metastatic implants thrive a pervade the marrow cavity unchecked. As invasi progresses, Myelophthisic changes occur in blood, a if the general microvasculature is invoved, dissemina of cancer cells causes microangiopathic changes in t red cells[3].

We analysed 15 cases of metastatic carcinoma of bo marrow. Commonest deposits (40 percent) were fro primaries located in the gastrointestional tract, followe by breast and prostate (20 percent each), thyroid (1 percent) and lungs (7 percent). This analysis wa conducted in order to find out the frequency of unsuspec involvement of haemopoietic system by metastasis of so

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USE OF BREAST TREATMENT TRIMMER (B.T.T.) IN TANGENTIAL FIELDS IN RADIOTHERAPY

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Abstract: *Breast Treatment Trimmer (B.T.T.) is an accessory with Theratron 780 at our centre used with Tangenitial fields in treatment of Cancer Breast. It consists of a conical plate made of steel with Al frame through which slides detachable beam exit Blade have been using this Trimmer for the last 15 years. use of B.T.T. saves a lot of time in treatment execution. It achieves 80cm SSD accurately which is otherwise difficult in oblique fields. B.T.T. helps in knowing the gantry treatment angles for Tangential fields and check the marking of entrance and exit fields. However, its main role has been in reducing the penumbra in the field to reduce radiation dose to the lungs. The elctron pattern of B.T.T. of difficult fields sizes using film dosemetry. The B.T.T. at this centre is also used for Tangential fields treatment of various superficial tumors viz squamous cell carcinoma of skin, over scalp, lip abdomen etc. Our study reveals that: i) There is an increase in surface dose due to electron contamination though within tolerance limits. ii) Penumbra is appreciably reduced at the edge of the trimmer, iii) We need dedicated field sized trimmers for use in different tangential field treatment of various superficial tumours, iv) Attempts should be made to reduce the weight of the trimmer and v) Penumbra increases with the distance.*

Key words: *B.T.T. (Breast Treatment Trimmer); Theratron 780; SSD; (Source to surface Distance); Penumbra*

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Introduction:

In the last thirty to forty years lot of progress has been achieved in successful treatment of breast cancer (Edard, 1981). Besides, surgery and chemotherapy radiotherapy is most commonly employed modality for treatment of breast cancer. It has three major roles (Edard, 1981; Allen, and Thomas, 1983; Host & Bernnhord, 1977).

i) Treatment for the disease in the intact breast with or with out local excision of tumor.
ii) pre-operative radiotherapy.
iii) Post-operative radiotherapy.

Depending on the type size, and location of primary tumor of and the status of axillary nodes the choice is being made on whether it is necessary to treat the axillary nodes as well as the breast (or chest wall). To treat chest wall, a pair of tangential beam is employed from medial & lateral sides for which particular and proper angles are calculated from the geometery of the interested surface (Andrabi 1997).

These tangential fields are given by using Breast treatment trimmer (BTT) which is an accessory with Theratron - 780 at our centre. BTT consists of a conical plate made of steel with frame through which slides detachable beam exit (Acrylic). The trimmer can be attached to the collimeter with a one turn lock screw. The basic purpose of using BTT is to save the lungs from getting exposed to penumbra radiation. the B.T.T. at this centre is also used for Tangential fields treatment of various superifcials tumours viz squamous cell carcinoma of skin, over scalp, lip, abdomen etc. We are using this BTT for the last 15 years. Discusse in this paper is our experience with this versatile acessory, variations in surface dose patern introduced, and complications theraby.

Experimental Methods:

Two sets of Radiographic films were exposed to Co-60 beam Theratron -780 at different SDD's. one set of films was exposed at 80 Cm SSD with Breast Treatment Trimmer (BTT) and with out BTT. The other set films was exposed at 95 cm SSD with same technique (with BTT & without BTT). The field size marked for exposure was 16x4 cm^2. Which is the field size generally used in Tangential fields in Ca. Breast patients. The field size was given lead marking to boundaries for identification. Both set of films was exposed and developed under similar conditions. The optical densities obtained were measured using RMI densitometer with an aperture of 1 mm.

The width of field was divided in segments of 0.25 cms and optical density (O-D) measured in each segment. O-D V/s segment no was plotted.

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Results and Discussion:

Surface dose decreased with increased of distance from the point of contact (fig 1 A-a).

The surfact dose extends upto 6.5 cms beyond the prescribed field size (fig.1 A-b).

The penumbra region is reduced to 2 mm on the "trimmer in contact" side (Fig. 1 A-c) in comparison to 1 cm "Trimmer not in contact". (fig. I B).

The penumbra region at the exit of the beam using Trimmer is 5 mm (fig. 1-C) in comparison to Trimmer not in use which is >5mm (fig 1-D).

Inspite of the increase in surface dose which is due to electron contamination arising from the edges of the BTT there has been no skin reaction in (700) patients treated in our centre so far. This indicates that the increase in surface dose is within tolerance limits.

The time of execution of treatment is reduced approximately to half using BTT as it achieves 80 cm SSD accurately of its own as it is otherwise difficult to achieve in Oblique fields.

Though BTT is good to use in Tangential field yet it needs some improvements. The same BTT can't be used for patients of small body frame. The size of the trimmer is too large and needs to be reduced. Since BTT can be used for tangential field treatment of various superficial tumours like carcinoma of skin, over scalp, lip, abdomen etc. where the field size is small compard to using in treatment of chest wall, dedicated BTT's need to be fabricated.

Perspex sheet fitted with the BTT at the entrance side when used gave acute reactions to the patients, hence they were removed and never used. We suggest not to use them as they expose the skin to dose beyond tolerance.

The BTT is heavy in weight. If by any chance it falls on the patients, it can cause an injury. Hence attempts are to be made to make the BTT's of ligh weight material.

Conclusion:

BTT's help in decreasing the irradiation of lung in chest wall treatments. They help in knowing SSD's, gantry treatment angles and check the marking of entrance and exit fields. However, they increase the surface dose due to electron contamination though within tolerance limits. Light weight dedicated BTT's need to be developed.

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COLOSTOMY CLOSURE IN COLON TRAUMA

Shabeer Ahmad Wani M.S.; G.Q. Peer M.S., FICS

Abstract: Forty eight patients who underwent colostomy closure for colonic trauma were analyzed prospectively. 75% of colostomies were in left colon and 25% were right sided. The interval from the original injury to colosto closure varied from 4 weeks to 25 weeks with a mean interval of 12.20 weeks. The mean post-operative hospital st was 20 days. There were 2 anastomatic leaks and no death in the entire series.

Colostomy closure is a low morbidity procedure.

Key words: Colostomy closure, colon trauma.

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Introduction

Although about 60% of colonic injuries can be repaired primarily, still a large number of patients will require a temporary colostomy as part of staged colonic repair [1-4] Once formed, the incidence of complications following elective colostomy closure has been the subject to debate. Morbidity rates varying between 22% to 33% have been reported with routine colostomy closure[5,6]. The excessive morbidity encountered with colostomy closure has been a major impetus for performing primary repair of injured colon. Others consider colostomy closure a low morbidity procedure. This controversy prompted us to conduct a prospective study on colostomy closures following colonic trauma over a 3 year period.

Material and Methods

This study was conducted in the Department of General Surgery at Sher-i-Kashmir Institute of Medical Sciences Soura, Srinagar which is the tertiary care hospital of the state. The study was carried on 48 patients of colonic trauma who underwent a fecal diversion procedure following initial colonic trauma. These patients were followed as out patients till their closure of colostomies. The patients were admitted to underwent elective colostomy colosure after a variable time period. All these patients were evaluated by means of Barium constrast studies of the distal colonic segment before admission. Once admitted, a standard mechanical bowel preparation as well as perioperative antibiotics were routinely employed. The technique of colostomy closure was uniform in all patients in that intraperitoneal continuity was reestablished in each patient by a hand sewn two layer anaestomosis. Postoperatively patients were followed upto maximum of 6 months.

Results

The patients included 43 males and 5 females, a between 15 and 64 years. Mean age was 29.93 years. patients were having gunshot injuries and 8 patients having blast injuries, 5 injuries occurred due to inser of foreign body per rectum as a result of physical tor While as in 2 patients there was history of blunt tr and in 1 patient trauma was due to colonoscopy. T interval from colostomy formation to colostomy clo varied from 4 to 25 weeks with mean interval of 12. weeks. No colostomy was closed in less than 4 we after initial surgery.

Table-1: Time interval between injury and colostomy c

Time Interval	No. of patients	Percenta
<4 weeks	0	0
4-8 weeks	18	37.50
9-12 weeks	16	33.33
13-24 weeks	8	16.67
>24 weeks	6	12.50
Total	**48**	**100.00**

36(75%) of the 48 patients had left sided colosto whereas 25% (12 percent) had right sided colosto

Among 48 patients, 6 patients developed complications with morbidity rate of 12.5%. The patients who developed fecal fistulas did not required operative intervention and healed by conserva management. One patient developed two episodes intestinal obstruction, was managed conservatively a times.

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Table-II: Complications of Colostomy (8 complications in 6 patients)

Complications	No. of Patients	Percentage
Wound infection	2	4.16
Obstruction	2	4.16
Fistula	2	4.16
Prolonged ileus	2	4.16
Total	8	16.64

Post-operative hospital stay ranged f,rom 8-38 days, with a mean hospital stay of 20 days.

Discussion

Trauma patients are a unique population, usually consisting of young healthy persons. The closure of colostomies in trauma patients may have a lower risk than implied in the literature with studies including patients with malignancy of inflammatory bowel disease.[7]

Thal and Yeary[8] reported a more favourable prognosis for this procedure in trauma patients. They compared ten series in which most colostomies were for non-traumatic reasons with five series in which the colostomies were for colonic trauma and found that the mortality to be sevenfold higher and morbidity double in the non-traumatic group.

Wound infection rate of 13.8% after colostomy closure for trauma patients has been reported by Sanjay Bhat et al.[9] Our study is comparable to above mentioned study.

However, 25% morbidity rate has been encountered in a study conducted by Pachter et al[10] and they advocate that colostomy closure is not a low morbidity procedure and should be considered as an important factor favouring primary repair.

Conclusion

Colostomy closure has a low incidence of morbidity and virtually no mortality. Careful selection, coupled with a thorough pre-operative evaluation and meticulous surgical technique will provide quite acceptable results. We should remember the military experience that the principles of diverting colostomy should not be abandoned because of the hazards of subsequent closure.

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SEROLOGIC DETERMINATION OF HELICOBACTOR PYLORI IN PSORIASIS

Seema Qayoom M.D.; Qazi Masood M.D.

Abstract: *Recently, several reports have been pointing to a possible relationship between H. pylori infection of gastr mucosa and dermatological diseases. Association has been reported for utricaria, rosacea, sjogrens syndrome a Henoch-scholein purpura. It has also been suggested that H. pylori may be one of the organisams capable of trigerri psoriasis.*

We did H. pylori serology in 50 clinically typical psoriatic patients presenting to the Department of Dermatolog S.M.H.S. Hospital, Srinagar to determine if antibodies of H. pylori could be found in them. These psoriatic patien were without any known gastrointestinal complaints. An equal number of healthy individuals constituted the contr group. the prevelance of H. pylori sero-positivity in psoriatic patients was significantly higher ($p < 0.05$) than control group.

Key words: *H. pylori, Psoriasis*

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INTRODUCTION

Psoriasis is a genetically determined inflammatory and proliferative disease of the skin characterised by a chronic relapsing nature and variable clinical features. The patients may present with few localised psoriatic plaques or with generalised inflammation of skin and development of pustules. Most studies indicate that once psoriasias appears as an early localised disease, it persists throughout life, manifesting itself at unpredictable intervals[1]

Spontaneous remissions do occur with varying frequencies. Several factors are now accepted, as of importance in provoking a new episode of psoriasis or in exacerbating pre-existing disease. Recently it has been suggested that Helicobacter pylori infection of gastric mucosa may be one of the organisms capable of triggering psoriasis[2].

Helicobacter pylori , a gram-negative curved or spiral bacterium discovered in 1983, resides in the mucuous layer overlying the gastric epithelium. Although symptomatic gastritits eventually develops in only 30% of infected persons, it is believed to be the major cause of chronic gastritis as well as gastric and duodenal ulcers[3].

H. pylori infects 50% of the world's population and at least 25% of the US population[3]. Socio-economic status is believed to be the major risk factor for child-hood acquisition of life long infection with H. pylori[4].

As the standard of living improves, the incidence of infection with H. pylori declines. In developing countries such as India, the prevelance rate is over 80% by the ag of 20 years[3].

Table-I : H. pylori serology in various types of psoriasis(n=50)

Type	Total No.	+ve serology	-ve serology
Guttate	7	3(42.8%)	4(57.2%)
Plaques	40	16(40%)	24(60%)
Pustular	2	1(50%)	1(50%)
Erythroderma	1		1(100%)

Table -II: H. pylori serology in various severity of psoriasis(n=50)

	Total No.	+ve serology	-ve serology
Mild	29	12(41.4%)	17(58.6%)
Moderate	18	7(38.8%)	11(61.2%)
Severe	3	1(33.3%)	2(66.7%)

H. pylori serology in control group

Enzyme linked immunosorbent assay (ELISA) tes used in these studies have sensitivity and specificity o 93 to 95%[3]. Charles L G[6] in a stydy of 33 psoriatic patien found H. pylori antibodies in 9(27%) patients only.

In our state, both acid peptic disease and psoriasi are common. Thus it was thought relevant to conduct th present study to determine if anti-bodies to H. pylori cou be found in a significant number of patients with psorias without known gastrointestinal complaints.

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Table-III : H. pylori serology in study group(n=50)

	0-20 yrs	21-40 yrs	41-60 yrs	Total
Positive	8(44%)	6(42.8%)	6(33.3%)	20(40%)
Negative	10(56%)	8(57.2%)	12(66.7%)	30(60%)
Total	**18**	**14**	**18**	**50**

Table-IV : H. pylori serology by age in control group (n=50)

	0-20 yrs	21-40 yrs	41-60 yrs	Total
Positive	0(0%)	3(10.7%)	2(20%)	5(10%)
Negative	12(100%)	25(89.3%)	8(80%)	45(90%)
Total	**12**	**28**	**10**	**50**

H. pylori serology in study group

Material And Methods

We studied a select group of 50 clinically typical psoriatic patients without any GIT complaints who presented to the Department of Dermatology, SMHS Hospital, Srinagar. Healthy individuals without any gastrointestinal complaints were taken as controls. Patients taking antibiotic or medications for upper gastrointestinal problems were excluded from the study. Informed consent was obtained in all cases.

Table-V: Comparison of H. pylori seropositivity in study and control group in various age groups (n=50)

	0-20 yrs	21-40 yrs	41-60 yrs	Total
Study group (psoriasis)	44%	42.8%	33.3%	40%
Control group	0%	10.7%	20%	10%

Comparison of results of study and control group using Chi-square test:

After obtaining a thorough history, a complete physical and dermatological examination was performed. Attention was given to type of psoriasis and area of involvement. The 'rule of nines' method was used for assessing the total area of involvement [7]. Patients with surface area involvement of <20% were categorised as 'Mild', 20% to 40% as 'Moderate' and >40% as 'Severe psoriasis'.

Besides routine investigations, H. pylori serology was done in both groups using 'UBIMAGIWELTM enzyme immunoassay. It is a microwell ELISA. The walls of the well are coated with purified H. pylori antigen.

The IgG value of anti-H pylori in each patient was obatined as follows:-

The test was considered valid when the O.D. value of reagent blank was less than 0.20; the O.D. value of calobrator was 0.60 or more and Eu/ml values of negative and positive control was within the range printed on the labels. The test was considered negative when Eu/ml (enzyme units) was <60, equivocal when 30-40 and positive when more than 40. The results were analysed using Chisquare test.

Table-VI: Comparison of results of study & control group using chi-square test

	H. pylori serology		
	+ve serology	-ve serology	Total
Study group (psoriasis)	20	30	50
Control group	5	45	50
Total	**25**	**75**	**100**

The expected frequency for each cell is calculated as:

$$E = \frac{\text{(total row) (total column)}}{\text{Grand total}}$$

	H. pylori serology		
	+ve serology	-ve serology	Total
Study group	20(12.5)	30(37.5)	50
Control group	5(12.5)	45(37.5)	50
Total	**24**	**75**	**100**

Results:-

Among the study group of 50 psoriatic patients, the distribution of sex was male 56% (28/50) and females 44% (22/50). The age ranged from 5-60 years. 29(58%) patients had 'mild', 18(36%) had 'moderate, and 3(6%) had 'severe' psoriasis.

20(40%) patients in the psoriatic group (Table I) and 5(10%) patients in the control group (Table II) demonstrated H. pylori antibodies. Table III and IV shows H. pylori serology in various types and severity of psoriasis.

Statistical analysis using chi-square test shows a significant difference ($p<0.05$) in the H. pylori seropositivity between the two groups. These data support a casual role of H. pylori in the pathogenesis of psoriasis.

Discussion:- In the current study, 20(40%), psoriatic patients and 5(10%) patients of control group demonstrated H. pylori antibodies. Although the seropositivity of both the groups is within the expected prevalance range, there is a statistically significant difference in the seropositivity of two groups. The low seropositivity in both the groups when compared to general population may be expalined by the fact that we excluded patients with known upper gastrointestinal complaints from the study. Although our study supports a casual role of H. pylori in the pathogensis of psoriasis, a large scale study is needed to confirm the findings.

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"ANTERIOR CHAMBER ASPIRATE CULTURES AFTER UNCOMPLICATED CATARACT SURGERY WITH OR WITHOUT INTRAOCULAR LENS IMPLANTATION"

Parvez A. Handoo M.S.; S.S. Sudan M.S., DOMS; Parveen Kour M.D.

Abstract: We cultured anterior chamber aspirate of 100 patients who underwent uncomplicated extra capsular cataract extraction with or without intraocular lens implantation. The aspirate was obtained at the time of wound closure. Of 100 patients, 29 (29 percent) had culture positive anterior chamber aspirate. Incidence of culture positive anterior chamber aspirate was significantly higher ($X^2=4.3$ of IP less than 0.5 percent) in eyes with intraocular lens implanted (42.42 percent) than those without intra ocular lens implantation (22.38 percent). Staphylococcus was the commonest organism isolated (58.62 percent) followed by corynebacterium (20.60 percent). None of the cases in which positive anterior chamber aspirate was obtained, developed any unusual inflammation post operatively. Antibiotic sensitivity pattern revealed ciprofloxacin to be 100 percent effective drug against bacterial flora. This study suggests that in the humans, the anterior chamber is capable of clearing a low inoculum of bacteria after cataract surgery without the development of endophthalmitis.

Key words: Extracapsular cataract surgery; Aqueous cultures; Antibiotic sensitivity.

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Introduction:

In 1972, Constantoras, Metzger and Frenkel[1] concluded that the anterior chamber remained sterile after intra capsular cataract surgery. More recently, Sherwood and associates[2] suggested that the fluid from the conjuctival sac contaminated with bacteria, routinely entered the anterior chamber during extra capsular cataract extraction. Sherwood found a 29 percent bacterial contamination rate of the anterior chamber after extra capsular cataract extraction. Contamination of irrigation fluid, drugs used locally and of the intra ocular lenses have been reported as a cause of culture positive anterior chamber aspirates in a number of cases[3]. The threat of contamination of anterior chamber from surgeon's hands, sutures and instruments used during surgery is ever present.

The proposition that intraocular lenses play a part in the pathogenesis of intra ocular infection and thus anterior chamber contamination is supported by the fact that electrostatic forces of intra ocular lenses allow the bacteria to adhere to implant surface as it passes across the eyelid margin or through the external aspect of the wound. Vafidis[29] studied 100 intra ocular lenses and found bacterial contamination rate of Intra ocular lenses as 26 percent. Dickey[4] and Walter[5] in their respective studies found aqueous fluid culture positive in 43 percent and 7 percent of cases during cataract surgery.

This study was designed to assess relative frequencies of species from the anterior chamber at the conclusion of cataract surgery and to know whether intraocular lenses play a part in the contamination of anterior chamber fluid.

Material and Methods:

We studied 100 patients who met the following inclusion criteria:

(1) No history or objective evidence of previous surgery or penetrating injury of the eye (2) No local or systemic infection at the time of surgery (3) No evidence of posterior lens capsule rupture at the time of surgery (4) No additional procedures combined with the uncomplicated cataract extraction, except for intraocular lens implantation. Patients were hospitalized one day before surgery their eyelashes were trimmed on the day of admission and the Framycetin eye drops were started 6 hourly in the eye to be operated. Cases were taken at random irrespective of age and sex. The eyes were dilated with 1.0 percent cyclopentolate. All medications used before surgery were sterile. In the operating room, peribulbar block was given. The eyelids, nose, cheek, eyebrow and forehead were cleaned with 5 percent povidone iodine solution in concentric rings outward from the eye with a cotton tipped applicator. The eye was then

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irrigated with sterile 0.9 percent saline solution. The head was draped with sterile cloth towels in the manner described by King and Wadsworth[6]. Uncomplicated cataract extraction was then performed by an extra capsular technique. A posterior chamber intra ocular lens was placed in 33 patients. All surgeries were performed using a fornix based conjunctival flap. In addition to surgical instruments, sterile balanced salt solution and sterile sodium hyaluronate were placed in the anterior chamber during surgery. Anterior chamber aspirate for bacterial and fungal culture were taken from each patient at the end of operation, before final corneascleral suture placement with the help of irrigation aspiration cannula and disposable 1 c.c syringe. The contents of the syringe were quickly and equally put on three sterile swabs. Nutrient broth and thioglycolate broth were used for transportation of these swabs to the department of Microbiology Subconjunctival injection of gentamicin 20 mgs and dexamethasone 2 mgs. were given at the end of surgery.

For acrobic culture sheep blood agar, chocolate agar and Mac-conckey agar were used as culture medias where as for anacrobic growth Robertson's cooked meat medium. Blood agar and concentrated blood agar were used, and for fungal isolation sabouraud's glucose agar medium was used. On the basis of colony characteristics, hemolytic properties and biochemical reactions, various grams postive and gram negative bacteria were identified. Cultures were grown atleast for a period of 6 weeks and weekly check-up was done for the appearance of any growth. The inoculated slant's showing no growth were discarded after 6 weeks. Whenever necessary, subcultures were done. Sensitivity to various antibiotics was tested using control strains of staphylococus NCTC 6571 and E coli NCTC-10418 by stoke's disc agar diffusion method which was incubated at 37°c for 18-24 hours.

Results

These cases of cataract ranged in age from 26 years to 82 years. Of 100 eyes, 29 (29% percent) had positive anterior chamber aspirate cultures. The pattern of bacteria isolated are shown in Table I

Acrobes constituted the majority of the organisms isolated (93.10%) Staph. epidermidis was the commonest organism isolated (58.62%) followed by corynebacterium (20.6%) and propiono bacterium acnes (6.89%). Propionobacterium was the only anacrobe isolated.

Of 100 extra capsular cataract extractions posterior chamber intaocular lens implant was placed in 33 patients. Incidence of positive bacterial cultures of anterior chamber aspirates of patients with intra ocular lens implantation was significantly higher than in those without intraocular lens implantation (Table II).

Table - I

Species of organism Isolated

Micro-organism	No. of positive bacterial Cultures	Percentage
Aerobes	27	93.10
a. Gram positive cocci		
staphy lococcus sp.	17	58.62
Staphy lococcus aureus	1	3.44
Strept. viridans	1	3.44
b. Gram positive bacilli		
Coryne bavterium sp.	6	20.6
Bascillus Sp.	1	3.44
c. Gram negative bacilli		
Moraxella Sp.	1	3.44
Anaerobes	2	6.89
Gram positive bacilli		
Proprionobacterrium Sp.	2	6.89

Table II

Total No. of Cases	Incidence of positive culture	Percentage
33 (with IOL)	14	42.42
67 (without IOL)	15	22.38

The pattern of bacteria isolated in patients with posterior chamber intra ocular lens implantation was the same as in patients without intra ocular lens implantation (Table III)

Table-III

Type of Micro Organism	No. of positive bacterial culture	Percentage
Acrobes	13	92.85
Gram positive cocci		
Staph epidermidis	10	71.42
Strept. Viridans	1	7.14
Gram positive bacilli		
Corynebacterium Sp.	2	14.28
Anaerobes	1	7.14
Gram positive bacilli		
propiono bacterium acnes	1	7.14

No fungus was found in any of 100 samples. Age, sex and right or left eye did not significantly affect the pattern of bacteria isolated.

Ciprofloxacin was 100 percent effective antibiotic in Vitro. Kanamycin was the next most effective drug (92.29%) followed by gentamicin (92.59%) and chloramphenicol (85.18%).

Gram stained smears were available from all the 100 anterior chamber aspirates. The presence of gram positive cocci and bacilli and gram negative bacilli correlated very well with the isolation of organisms in culture.

Discussion

Aqueous samples in our study have been demonstrated to be culture positive in 29% of cases. This is in contrast with the study of Dickey[1] and Walter[5] who have reported in their respective studies, a contamination of 43% and 7% respectively. On the other hand, our anterior chamber aqueous contamination rate was similar to the study of Sherwood[2] who demonstrated that fluid on the external ocular surface entered anterior chamber during extra capsular cataract surgery. Of 101 patients who underwent extra capsular cataract extraction, 29 had, organism recoverable from their anterior chamber fluid at the conclusion of cataract surgery. 90 of these same patients had organisms grown from pre operative conjunctival drain samples. Sherwood, did not delineate the organism species or the frequencies with which the species were recovered from anterior chamber aspirate. Rather, the anterior chamber fluid isolated were grouped indistinguishably with isolates from the external ocular drain in their final analysis.

Frankel performed intra capsular cataract extraction without intraocular lens implantation and demonstrated one positive anterior chamber aspirate culture out of 100 eyes studied. This one culture grew staphylococcus epidermidis and was considered a contaminant. It was conclusion of this study that the aqueous humour remains sterile throughout routine Intra capsular cataract extraction. Cataract surgery in these patients was performed using a corneo scleral limbus based conjunctival flap. They opined that this approach could allow for a less direct path of entry for organisms in the anterior chamber from the ocular adnexa than would be the fornix based conjunctival flap used in our study. Our study included only cases with an intact posterior capsule, we were able to aspirate up to 0.20 of fluid to facilitate organism recovery. Constrantas, Metzger and Fräkel based their conclusion on one drop of anterior chamber aspirate per patient.

Of these 29 culture positive anterior chamber aspirates, aerobes, comprised 27 cultures (93.10 percent). The finding is similar to the findings of Dickey and associates[4] and walter and associates[5] who recovered the aerobic organism from 94.44 percent and 100 percent cases respecitvely.

Propiono bacterium acnes was the only anaerobe isolated in 6.89 percent of cases. None developed toxic lens syndrome. The organism isolated in this condition has usually been propiono bacterium species[8]. It may be that the bacterial load was insufficient or the host defences were sufficient to eliminate the organism.

Our results are consistent with the previous studies that document the presence of organisms capable of causing endophthalmitis on the cataract operative field[9-12]. Numerous investigations from other surgical disciplines have documeted a substantial rate of bacterial contamination in many types of surgical wounds[13-16]. Organisms gaining access to the surgical wounds are predominantly those same organisms that constitute common skin flora (Coagulase negative staph sp. propionobacterium sp. and other diphtheroids).

Staphylococcus epidermidis is recognised as the leading cause of endophthalmitis after cataract surgery, with stphylococcus aureus, gram negative roads and streptococcus species constituting most of the remainder causes[17-19]. The frequency of coagulase negative staph Sp. as a percentage of total isolates in our study (58.62 percent) was similar to the incidence that this organism is a cause of culture positive endophthalmitis after cataract extraction (38 to 60 percent)[17-18]. The eyes with anterior chamber aspirate positive for microoganisms did not develop endophthalimits in our study. We believe that organism virulence, inoculum size and the integrity of posterior capsule are factors that influence the progression or non progression to endophthalmitis. Also, we suggest that the aqueous humour possesses antimicrobial properties. Immunoglobulins and complement components have been demonstrated in the aqueous humor of patients undergoing cataract surgery[20-21]. Mechanical filtration through the trabecular mesh work may also reduce the intraocular bacterial load[21].

Organisms of higher virulence cause endophthalmitis at a rate higher than that cultured in our anterior chamber aspirates. Staphylococcus aureus is found to be cause of endophthalmitis with a much higher frequency (21-26 percent)[17-18] that its presence in the anterior chamber would predict. Conversely, corynebacterium Species and other diphtheroids, seed into the anterior chamber with a much higher frequency than they are a cause for infection (0%-1%)[17-18]. The diphtheroid group have long been identified as an organism of low virulence that rarely causes ocular infection[23].

Preservation of posterior capsule augments the anterior chamber's ability for sterilization by forming a barrier to prevent organisms from seeding in to the vitreous humour[21-25].

In this study of 100 patients 33 had polymethyl metha acrylate (PMMA) posterior chamber lens implantation and 67 undervent simple extra capsular cataract extraction. the percentage of positive anterior chamber aspirate was higher in eyes which underwent intraocular lens implantations (42.42 percent) than those which do not (22.38 percent). This difference was found to be statisically significant as observed X^2 value (4.3) is greater than the corresponding Table value (3.84) at 5 percent level of significance (x^2 4.3 of 1p less than 0.5 significant). Forster[3] in his tudy also observed a higher percentage of culture postive anterior chamber aspirates in eyes which underwent intra ocular lens implantation (75 percent) than those which do not (50 percent). In contradiction, Driebe[17] reported that implant does not significantly affect the microbiology of anterior chamber. Vafidis and spencer[26] have both shown organisms especially staph epidermidis on the surface of PMMA intra ocular lenses prior to the implantation. Griffth[27] reported that staph epidermidis has the ability to adhere to plastic surfaces by means of polysaccharide glycocalyx which also confers resistance to antibiotics and host defences. Vafidis[29] have demonstrated that bacteria may adhere to IOL perhaps due to electrostatic charges when the intra ocular lens touches the ocular surface.

This study showed that the microbiological spectrum is similar in both pseudophakic and aphakic eyes with the exception of a slight higher percentage of gram positive organism in the pseudophakos (100 percent) as campared to 93.2 percent in eyes without IOL implantation. This difference is statistically insignificant as observed X^2 value (1.12) is less than corresponding table value (3.84) at 5% level of significance. This observation coincided with those of previous reports[17,3].

All the isolates were sensitive to ciprofloxacin (100%) followed by Kanamycin (96.29%) gentamicin (96.59%) and chloramphenicol (85.10%). Gram stained smears correlated well with the isolation of organisms in culture. By virture of its simplicity, wincesslous[28] has highly recommended gram stained smears in developing countries.

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THE STUDY OF LATENT PERIOD BETWEEN PREMATURE RUPTURE OF MEMBRANES AND ONSET OF LABOUR IN LEAKING WITH INTACT MEMBRANES, LEAKING WITH ABSENT MEMBRANES AND CONTROL GROUP.

Tabassum Parvez M.B.B.S., M.D.; Farhat Hamid M.D.

Abstract: The present study evaluated the duration of latent period between a premature rupture of membranes and onset of labour in 100 cases, which were divided into 3 groups-leaking with intact membranes groupI, leaking with absent membranes group II and control group III. It showed delayed onset of labour in group I patients, with slight hastening of labour in leaking with absent membranes and showed rapid onset of labour in control group as compared to above two groups. Prolonged latency is associated with increased maternal morbidity and perinatal mortality in all 3 groups of premature rupture of membranes studied.

Key Words PROM (Premature Rupture of Membranes).

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Introduction:

Premature rupture of membranes is defined as spontaneous rupture of membranes and escape of liquor aminii before onset of labour, occuring before 37week of Gestation or in case where labour did not ensue within one hour of rupture of membranes. Latent period of few hours or several days would elapse before actual labour would start, effect of prolonged latency was studied with respect to infections, meternal morbidity, mortality and perinatal out come in such cases of PROM.

Table: Latent period between pre-mature rupture of membranes and onset of labour among three groups.

		Onset of Labour	
S.No	Group of cases	Within 12 Hours	Within 48 Hours
I.	Patients with leaking and intact membranes. (n=33)	9 (27.27%)	24 (72.73%)
II.	Patients with leaking and absent membranes (n=33)	18 (54.55%)	15 (45.45%+
III.	Control group (n=34)	20 (58.82%)	14 (41.18%)

+ Remarks $X^2 df_2$
$P<0.025$.

OBSERVATION:

Onset of labour in group I i.e, leaking with intact membranes 27.27% started labour within 12 hours while 72.73% started labour within 48 hours. This showed delayed onset of labour in this group of patient's. In group II-leaking with absent membranes 54.55% started labour within 12 hours and 45.45% started labour within 48 hours which showed that labour slightly hastens with absent membranes. In control group 58.82% started labour within 12 hours and 41.18% within 48 hours. This shows rapid onset of labour in control group as compared to above two groups.

Discussion:

Studying latent period in three groups between PROM and onset of labour, it showed rapid onset of labour in control group as compared to other two groups of patients.

Calkins[1]: In year 1952 who studied 7000 deliveries has seen 1st stage of labour very much shorter in patients having prom which may be because of greater uterine motility or more favourable cervix or both.

BREEZE[2] in the year 1970 shows 1st stage of labour to be moderately shorter in both primigravidas and multigravidas with premature rupture of membranes.

WEBB, WEBSTER AND LANIER[3] In year 1981 studied effect of prolonged latency in association with prom on maternal morbidity, perinatal mortality and fetal growth. Prolonged latency was associated with severe maternal sepsis despite antibiotic treatment, thus policy was taken to deliver all cases with chorioamnionitis as expeditiously as possible.

BISKIND[4] In year 1957 showed labour and delivery in prom will most likely occur within 72 hours after rupture of membranes so all such patients should be

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observed and hospitalized for at least first 72 hours.

LANIER L. RICHARD[5]

In year 1965 showed that antibiotic therapy is a definite help in decreasing complication after a latent period of more than 18 hours.

From the above observation, it is seen that all patients with leaking showed be advised hospitalization, keenly observed minimal vaginal examinations attempted and administration of effective antibiotics will decrease complications both maternal and fetal.

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A CASE OF INTRACTABLE ASCITES

M. Ayoub Mirza M.D.; M.R.C.P.

Abstract: *Severe chorinic ascites remains a difficult diagnostic and therapeutic problem. In order to find the cause and manage the resistant ascites appropriately one should be very open minded with the differential diagnosis. I present a case of intractable ascites managed erroneously for many years as alcoholic cirrhosis.*

Key words: *Ascites, Intractable, Cirrhosis*

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A 42 year white male with a 6-year history of ascites presumed to be secondary to alcoholic cirrhosis was admitted for management of intractable ascites. He had been managed with diuretics and repeated paracentesis in the past and subsequently had Transjugular Intrahepaic Portosystemic Shunt (TIPS) put in but continued to have ascites.

His past medical history was significant for bipolar psychiatric disorder. He attempted suicide by stabbing his chest 6 years ago. At that time he was admitted to hospital and discharged after few days of observation. His current medication included frusemide 240 mg once a day, Spironolactone 100mg once a day and Ranitidine 150-mg once a day. He was an ex-smoker and had quit 7 years ago. He used to drink 6 units of alcohol per day for 12 years but stopped 7 years ago. The family history was unremarkable.

On physical examination he was conscious, alert and oriented. He was afebrile, pulse was 86/minute and blood pressure was 83/50 mmHg. He had grossly distended abdomen with shifting dullness and fluid thrill. The liver was palpable 3cm below costal margin. He had bilateral leg edema up to the knees and the rest of the physical examination was unremarkable. The laboratory values revealed decreased Sodium to 120meq/L, raised Potassium to 5.7 meq/L and elevated Creatinine to 2.41mg/dl. The complete blood count was normal and Liver function test revealed albumin 2.2G/L, AST 22U/L, ALT 36U/L, alkaline phosphates 200U/L and bilirubin 0.9mg/dl.

He was placed on low salt diet, diuretics were continued and he underwent abdominal paracentesis. His TIPS was checked for possible blockage and at that time pressure measurement revealed elevated pressure in the hepatic vein, inferior venacava and the right atrium. The pressure in the right atrium was found to be 29 mmHg. These findings suggested the cardiac cause for the ascites. The trans esophageal echoacardiogram revealed thickened Pericardium and the cardiac catheterizaton revealed prominent X and Y descent in the right atrium tracing, prominent square root sign in the right ventricle and equalization of the pressure between the right and left ventricle. These findings were consistent with Constrictive Pericarditis. The restrictive cardiomyopathy was ruled out by a normal endomyocardial biopsy.

The picture of a CT Scan of a 35 year. old lady who presented with abdominal distention. The CT scan shows Polycystic Liver Disease with Polycystic Kidneys Despite the multiple cysts in the liver this patient had normal liver function test.

He underwent Pericardiectomy and his ascites improved dramatically. Over the period of few weeks his leg edema and ascites resolved and his liver function tests improved.

Going through his past medical history again it was discovered that 6 years ago at the time of attempted suicide he had injured his Pericardium and echocardiogram at that time showed a shadow in the Pericardium. Since he

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was asymptomatic at that time it was ignored as the artifact and he was discharged. The shadow on echocardiogram was most likely a hematoma which resolved over the years leading to Constrictive Pericarditis.

Discussion

The diagnosis of Constrictive Pericarditis may be difficult to make and is often delayed. Hepatomegaly, ascites and leg edema are common and may erroneously suggest primary liver disease. The raised jugular venous pressure is always present but may be overlooked particularly if raised beyond the angle of jaw. This sign is the single most important differentiating point between Constrictive Pericarditis and primary liver disease and failure to appreciate this sign was the principal reason for the long delay between presentation and final diagnosis in this case. The Kussmal's sign, and increase in central venous pressure on inspiration is present in minority of patients, an early diastolic heart sound "pericardial knock" is usual however and highly specific for this condition.

Most difficult to distinguish from CP is restrictive cardiomyopathy, which sometimes shows a strikingly similar clinical findings. The pericardial Calcification on x-ray of chest or CT Scan, the echocardiogram and cardiac Catheterization with endomyocardial biopsy may be helpful in differentiating the two disorders. in Perplexing cases exploratory surgery is necessary to exclude the eminently treatable entity of Pericardial Constriction.

Constrictive Pericarditis secondary to hemopericardium is the known entity[4,7]. The presence of blood in the pericardial sac seems to elicit Inflammation which can sometimes evolve into fibrosis and pericardial Constriction[2].

Early diagnosis of CP is important to prevent the complications of Long-standing disease, which include cardiac cirrhosis, myocardial fibrosis, protein losing enteropathy and nephrotic syndrome.

Summary

In constrictive pericarditis a careful physical examination will help to differentiate it from liver disease, which is a major differential diagnosis of this condition.

Careful History taking and clinical examination remains the cornerstone of any diagnostic workup, even in this era of technological refinement.

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STRESS AND HYSTERICAL FUGUE: A CASE REPORT

M Aslam M.D.; Zia Ud Din M.B.B.S.

Abstract: We present a case of hysterical fugue as a result of sudden stress, in a 30 year old male. Hysterical fugue has to be differentiated from an epileptic fauge.

Key words: Hysteria Fugue amnesia.

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INTRODUCTION:

The history of simulation of neurological diseases dates back to 1900 BC in Egypt[1]. The Egyptian physicians thought hysterical symptoms to be due to upward mobility of the uterus in the abdomen. Hippocratic physicians used this concept and coined the term hysteria (hysteria in Greek means uterus). Slater[2] said that it is generally agreed that no one has yet framed a satisfactory definition of hysteria but it is usually claimed that it can be recognized when met with. Galen defined hysteria as a complex incurable disease with an unknown physical cause. He located the seat of the disorder in the cerebellum which he defined as the seat 'of carnal love'[3,4] Jean Martin Charcot, a French Neurologist was using hypnoses and suggestions to correct the weakness of nervous system in hysterical patients. He viewed hysteria as a hereditary degenerative disease because these patients could be easily hypnotized[5]. Breuer[6] described a model of 'hypnoid states' in which ideas that were registered in an altered state of consciousness became unavailable to the person in his normal conscious state. Sigmund Freud[7] conceptualized dissociation as an active process, warding off (banning off) painful affects from conscious awareness. Hysterical fugue is characterized by episodes of unexpected, yet organized wandering away from home, office or places of usual everyday social activities. During the episodes, the person usually adopts a new identity[8] or is confused about his identity[9] with complete amnesia for the earlier life. The onset is usually sudden often in the presence of severe stress. The termination is also abrupt and is followed by amnesia for the episode.

CASE REPORT:

A 30 yr. old male (ABC) from the district of Pulwama in Kashmir valley was apparently well until he received news about the sudden demise of his father in a shoot out incident. The very next day he left for a far off village where he identified himself as someone else (XYZ). The patient was taken back to his home but he denied being (ABC) instead called himself (XYZ). He was brought to our OPD where we stated him on antidepressants, anxiolytics, psychotherapy, and hypnoses. He continued to stay at his relative's place as (XYZ). The patient was hypnotized repeatedly and given suggestions that he was (ABC) and his father died in a shoot out. After about three weeks the patient started recollecting his past and called himself (ABC).

This patient presented was a typical case of hysterical fugue precipitated by severe stress. He had to be differentiated from an epileptic fugue, which lasts for a shorter duration of time and the patient is usually disoriented and often dirty, dishelved and neglected[10] and it usually does not start after stress. All these symptoms were absent in the patient. Moreover his E.E.G was normal. We conclude that the prevailing stress in the valley can have serious psychological effects on masses especially the young generation and also that a combination of drug therapy, psychotherapy and hypnoses can be of help in the treatment of hysterical patients.

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RIFAMPICIN INDUCED ACUTE TUBULAR NECROSIS IN A RENAL ALLOGRAFT RECIPIENT

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Abstract: *A renal allograft recipient was treated for genitourinary tuberculosis with reinstitution of Rifampicin after a medication free interval of 8 months, earlier he was treated for tubercular pleural effusion. After eight days of treatment patient developed severe hemolytic anemia and acute renal failure necessitating dialysis. Biopsy taken from graft showed features of acute tubular necrosis.*

Key words: *Acute Tabular Necrosis, Renal Allograft, Rifampicin*

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INTRODUCTION

Rifampicin is one of the most common antitubercular drug used. Though hepatotoxicity is the most frequent side effect observed, cases of acute renal failure (ARF) following rifampicin have been reported. Over 60 cases of ARF have been attributed to Rifampicin use in literature. The majority of cases (90%) have occurred during intermittent therapy or after resumption of drug following a lapse in daily therapy[1].

We report a case of ARF and hemolytic anemia in a renal allograft recipient following re-exposure to rifampicin.

Case report

55 yr old male was admitted to Nephrology unit of SKIMS. He had undergone renal transplantation live, unrelated, put on standard cyclosporine based triple therapy. Following renal transplant patient had developed tubercular pleural effusion and had received antitubercular drugs (Isoniazid 150 mg Rifampicin 450 mg, Pyrazinamide 1.5 g and Ethambutol 800 mg per day) for first two months followed by INH, Rifampicin for 7 months and had completed the treatment 8 months back. Patient was admitted with chief complaints of right flank pain, fever, dysuria. He had no arthralgias, skin rash, decrease in urine output or jaundice. Systemic examination was essentially normal with no graft tenderness. Investigations showed hemoglobin 10 gm/dl total leucocytic count of 4800/mm^3 with 65% neutrophils, 30% lymphocytes, 3% monocytes and 2% eosinophils. Chest x-ray was normal. Kidney and liver function tests were normal. Urine examination showed albumin 1+, sugar nil, WBC 4-6, RBC full field, urine for AFB was positive repeated five times. While AFB culture was sent, patient was treated for genitourinary tuberculosis with INH 300 mg, Rifampicin 450 mg, Pyrazinamide 1.5 gm and Ethambutol 800 mg per day. Immunosuppressants, cyclosporine, azathioprine and prednisolone were continued in conventional doses. After 8 days of antitubercular therapy patient developed lumbar pain, diarrhoea, urine output decreased to 100ml/day, gross hematuria and encephalopathy with investigations showing hemoglobin 6 g/dl. Total leucocytic count 6200 mm^3 with peripheral blood film showing features of hemolysis, kidney functions deteriorated progressively with blood urea nitrogen 60 mg/dl, serum creatinine 7mg/dl, Sodium 134 mEq/L and potassium 4.8 mEq/L. Serum bilirubin increased from 0.9 mg/dl to 3.1 mg/dl. Liver enzymes (AST, ALT & ALP), calcium, phosphorous and uric acid were normal. Sr. LDH and hemolytic profile was suggestive of intravascular hemolysis. Ultrasound of graft and cyclosporin levels were normal. Patient was managed with hemodialysis but did not show any improvement and 15 days later patient died. Biopsy of the graft was performed postmortem, which showed features of acute tubular necrosis with all 24 glomeruli being histologically normal. No evidence of rejection or cyclosporine toxicity was observed.

DISCUSSION

Rifampicin causes a variety of structural and functional renal lesions. It is well established that re-introduction of rifampicin following a long drug free interval is more likely to result in severe renal failure than in intermittent or

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continous therapy[1]. Four different patterns of Rifampicin-induced ARF have been described: Acute tubular necrosis, rapidly progressive glomerulonephritis, acute interstitial nephritis and light chain proteinuria[2]. Acute tubular necrosis is the commonest lesion observed, sometimes associated with intravascular hemolysis or thrombocytopenia. Proliferative glomerulonephritis, especially the crecenteric form has also been reported in association with interstitial nephritis in occasional patients[3,4].

Our patient had developed severe hemolytic anemia and ARF after reinstitution of rifampicin after a drug free interval of 8 months. The pathogenesis of ARF and hemolysis is believed to be immunological in origin, proved by the presence of circulating antibodies to rifampicin which react with circulating erythrocytes, leucocytes, platelets[2]. The antgen (I antigen) is also expressed on the tubular epithelial cells, but not in the glomeruli[7].

These antibodies are more common in patients receiving intermittent therapy[5,6].

Acute tubular necrosis to which the present case could be allocated, presents with fever, chills, myalgias, nausea, vomiting, diarrhoea, abdominal and lumbar pain. Anemia due to intravascular hemolysis and thrombocytopenia are frequently present. The renal failure has an oligoanuric course requiring dialysis. Recovery is usualy complete. Renal biopsy typically shows tubular necrosis and mild interstitial infiltrate.

In conclusion, ARF during rifampicin therapy most often occurs with interrupted or intermittent treatment and can present as a fulminant systemic reaction often associated with hemolytic anemia or thrombocytopenia. With continued use of Rifampicin for the treatment of a number of clinical entities (especially severe staphalococcal infection) the likelihood of reexpoxure of an individual to the drug increases. Therefore, one should be aware of this particular type of toxicity in which re-exposure is a critical factor. Hence a clinical syndrome of fever, gastrointestinal distress, lumbar pain, decreased urine output after ingestion of rifampicin should promptly point to the diagnosis.

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A NEWBORN WITH LEFT PULMONARY AGENESIS

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Abstract: Bilatoral pulmonary hypoplasia represents a broad spectrum of anatomic malformations ranging from fetal bronchial and parenchymal agenesis to mild pulmonary parenchymal hypoplasia. Complete pulmonary agenesis is almost always anilateral (usually involving the left lung) and is frequently accompanied by other congenital anomalies.

A case of pulmonary agenesis left lung without associated anomaly is presented here, the first of its kind reported from Kashmir Valley.

Key Words: Agenesis, Hypoplasia, Malformation, Parenchymal, Pulmonary.

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Case Report

A two day's old male newborn was admitted in Neonatology section of main teaching cum referral Children Hospital of the valley, with respiratory distress and bluish discoloration. Clinical examination revealed mild cyanosis and moderate to severe respiratory distress. Examination of the chest showed bilateral intercostal and subcostal retraction, slight shifting of trachea to the left side with no air entry on the left side of chest. Cardiovascular, abdominal and neurological examination was normal.

Investigations revealed hemoglobin of 16 gms per dl with normal complete blood count and renal parameters,

Figure I

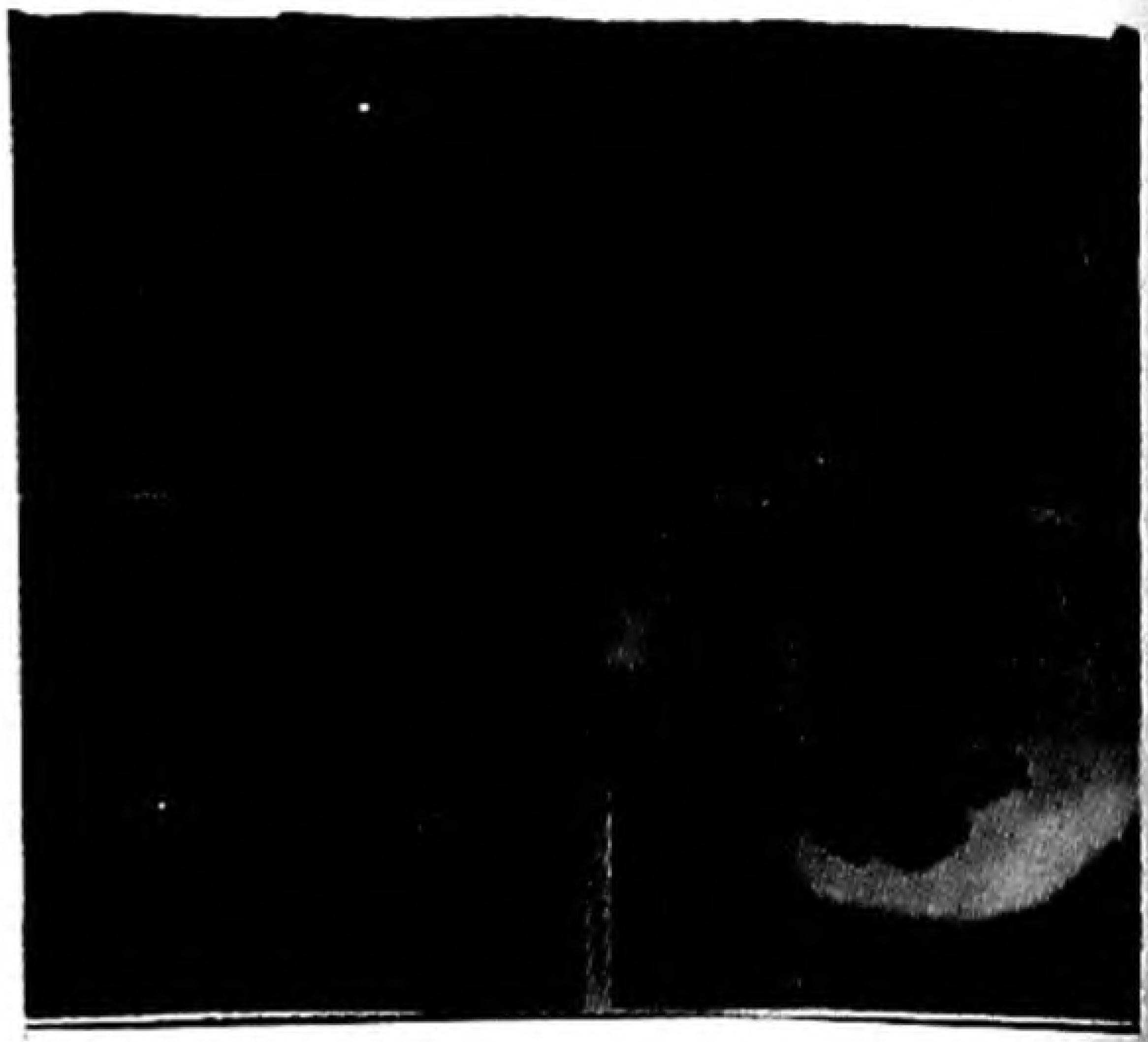

Figure II

X-ray chest showed radiopaque left hemithorax without any associated vertebral or rib abnormality or crowding. The mediastinum was shifted to the left side with hyperinflated right lung. (Fig-1) C.T. Scan chest revealed absence of pulmonary tissue on the left side. (Fig-2), USG abdomen revealed no abnormality Arterial blood gas analysis showed mild metabolic acidosis.

Discussion;

Pulmonary hypoplasia may be seen as an isolated entity called primary pulmonary hypoplasia or may be Secondary to the lesions restricting lung growth[1,2]

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Primary pulmonary hypoplasia could be pulmonary agenesis (unilateral) which can occur alone but is frequently associated wih other congenital anomalies or presents as Idiopathic pulmonary hypoplasia (bilateral)[1,4].

A histological diagnosis is based on the demonstration of a low ratio of lung to body weight, low lung DNA content or a decreased radial alveolar count[3].

Secondary pulmonary hypoplasia is due to

a. Congenital diaphragmatic hernia (unilateral)
b. Oligo-hydramnios chronic amniotic fluid leak with Renal agenesis and Dysplasia.
c. Skeletal and neuromuscular disease[2,4].

Our patient had primary pulmonary agenesis of left lung without any associated anomaly. The anomaly has also been reported earlier by many authors. However, this was the first case of its kind reported from Kashmir Valley.

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PREMATURE RUPTURE OF MEMBRANES AND ITS EFFECT ON LABOUR, MATERNAL AND FOETAL OUTCOME.

The prospective random study of maternal morbidity, mortality and perinatal outcome was studied for a period of one and half-year in 100 cases of pre-mature rupture of membranes admitted in Lal-Ded hospital Srinagar. The incidence of pre-mature rupture of membranes was 2.6% as there were 15,000 cases, out of which 400 cases were of pre-mature rupture of membranes. Observations were taken in three groups:

i) Leaking with intact membrane.
ii) Leaking with absent membranes.
iii) Control group, which included all mal-presentations that favored pre-mature rupture of membranes.

The age group involved commonly in pre-mature rupture of membranes and also on comparison between the 3 groups, is younger age group with average age 29-30 years.

Pre-mature rupture of membranes mostly involves multigravidas in comparison to primigravidas, also on comparison within the groups, higher incidence in multigravidas is seen 55 to 57%. Anaemia is significantly seen with increased incidence in all 3 groups of pre-mature rupture of membranes 29-33%. Highest incidence seen in leaking with intact membrane and in control group cases. Hypertension has equal influence in all 3 groups of pre-mature rupture of membranes 9%.

Low socio-economic status plays an important role in control group cases 64%, where as patients with average socio-economic status are more commonly seen in leaking with intact membranes and absent membrane group.

Commonly preterm gestational age groups are involved in pre-mature rupture of membranes. In control group highest incidence is seen i.e, 91%, followed by leaking with absent membrane group i.e, 87% and lowest incidence of 72% in intact membrane group.

Latent period varies in different groups of pre-mature rupture of membranes with rapid onset of labour in control group. 58% start labour within 12 hours in this group. 54% start labour within 12 hours in leaking with absent membranes and a long latent period seen in leaking with intact membrane group, where only 27% cases start labour within 12 hours after rupture of membrane. This shows that first stage labour is shorter in patients having early rupture of membrane than in those whose membr remain intact until later in labour, probably because greater uterine motility or more favorable cervix or bo

These findings regarding latent period are consis with Calkins L.A who in his study of 7000 deliveries h seen that first stage of labour is very much shorter patients having premature rupture of membranes, somewhat shorter in those having early rupture than those whose membranes remain intact until later in labo Breese and Ballard in year 1952 showed that in prema rupture of membranes first stage of labour to moderately shorter in both primigravidas multigravidas, but second stage did not appe significantly altered.

Latent period has a very important bearing, prolonged latency is associated with increased mater morbidity and perinatal mortality in all three groups pre-mature rupture of membranes studied. All pati with leaking should be advised hospitalization, k observation, minimal vaginal examinations attempted administration of antibiotics without delay to decre complication both in mother and fetus.

The maximum incidence of normal delivery was se in absent membrane group i.e, 96% with least opera intervention. Increased incidence of operative interve seen in control group cases i.e, 27%. Probably bec of malpresentation like breech and Transverse lie.

Maternal morbidity has significant relation with l period and increased number of vaginal examina performed. Increased incidence of maternal morbidity s in leaking with intact membrane group i.e, 39% bec of pro-longed latency as compared to other 2 groups 14-18% incidence. Maternal morbidity is seen as febr illness, urinary tract infection, chest infection, bre engorgement etc.. To decrease maternal morbidity o should take policy of "Hands Off" i.e, avoiding repea vaginal examinations after rupture of membranes a early use of antibiotics.

Amnionitis study by various authours in associa with premature rupture of membranes is shown as und

- Clark study showed incidence of amnionitis as	11%
- Dyer, Ekvail, Wixted	12%
- Lanier and Associates	28%
- Bryans	23%
- Brelje and Kaltreider	21%

Foetal mortality depends on how long the baby is in uterus after rupture of membranes and of what gestational age. Highest incidence seen in control group i.e, 41%, in other two groups 24-33% incidence was seen. Increased incidence of foetal mortality was seen in small gestational age and weight range from 1000 to 2000 gms., because of prematurity and also increase in latent period is directly proportional to foetal mortality.

The incidence o perniatal mortality ranges from 17-18% in all three groups of pre-mature rupture of membranes. Perinatal mortality is related to increasing latent period, where by ascending infection and aspiration pneumonia, are the responsible mechanisms. Perinatal mortality is increased in relation with amnionitis.

Respiratory distress syndrome is seen in 15% of cases of leaking with intact membranes and 3% of absent membrane cases. It is absent in control group. Overall decreased incidence of RDS is seen with pre-mature upture of membranes as it is seen to increase pulmonary ung maturation by increasing lecithin sphingomyelin atio.

Timely and judicious use of antibiotics is seen to decrease the maternal morbidity, mortality and perinatal mortality in all 3 groups of pre-mature rupture of membranes. Antibiotics were used in more than 80% ases.

Incidence of PPH is 15-18% in leaking with intact membrane and absent membrance group. Low incidence een in control group cases i.e, 8.82%.

No maternal mortality was seen in our study, probably ecause of speedy obstetric care and management in such ases.

Average hospital stay was 1-9 days. Birth weight of abies did not have significant difference in 3 groups, irth weight ranging from 650 gms. to 2500 grams was een.

Resuscitation measures were needed in all 3 groups. Highest seen in leaking with intact membrane cases i.e, 48%. Lowest in control group i.e, 35% which shows it is directly related to increase in latent period. It was concluded that approach with caution in all cases of pre-mature rupture of membranes by early admission, keen observation, minimal vaginal examinations , administration of selective anti-biotics with induction of labour in properly selected cases. All this would decrease maternal morbidity, mortality and result in better perinatal outcome in cases of pre-mature rupture of membranes.

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NEW DEVELOPMENTS IN THE TREATMENT OF CMV RETINITIS

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Cytomegalovirus (CMV) retinitis is rare infection of the retina caused by the CMV virus, which usually occurs in patients with impaired immune system e.g., patients on cytotoxic therapy, patients with AIDS and following organ transplantation. CMV retinitis is the leading cause of visual loss in patients with AIDS (Acquired Immunodeficiency Syndroma) affecting an estimated 20% to 40% of AIDS patients.[1,2] Approximately 40,000 cases of CMV retinitis occur annually in the USA. As a result, it is important that this infection be recognised early so that appropriate therapy can be instituted. CMV retinitis occurs primarily in individuals with CD4 cell count (Helper T cells) below 50 uL. The management of CMV retinitis has evolved considerably over the last decade. Prior to the advent of intravenous ganciclovir, numerous pharamacological treatment of CMV retinitis had been unsuccessful. Agents being used were acyclovir, alpha interferon, vidarabine, broad spectrum antibiotics, corticosteroids and antifungal agents.[3]

Current standard therapy is, intravenous ganciclovir (5 mg/kg BD) or foscarnet (90 mg/kg/BD) given initially for 2-3 weeks, until retinitis clears, followed by an indefinite maintenance regimen (5 mg/kg/OD-ganciclovir, ad 90-120 mg/kg/OD-Foscarnet) even with continuous daily maintenance therapy, recurrence and progression of retinitis occurs in most patients who may require re-induction treatment at ever decreasing time interval. In a recent randomized clinical trial, the median time to progression of disease was 47 days for patients treated with ganciclovir and 53 days for patients treated with foscarnet. Recurrence may be due to a combination of factors - Development of resistant CMV strains, increased immunosuppression of the affected individual, or inadequate drug dosing. Reactivations are best detected using fundus photography.

One dilemma in CMV retinitis is which initial therapy is to be instituted. Ganciclovir is easier to use, but Foscarnet actually provides an improvement in life expectancy, probably due to its anti-retrovirus effect. In the past, treatment with intravenous ganciclovir often had to be interrupted because of neutropenia. The availability of leucocyte stimulating factors now has made this much less common and cessation of therapy because of toxicity is rare. Foscarnet is nephrotoxic and may result in electrolyte imbalance. Recently, another virostatic drug cidofovir (Acyclic nucleoside analogue) has received FDA approval for intravenous use in CMV retinitis. Prolonged and dose dependent anti-CMV activity is observed with all cidofovir regimens more than or equal to 3mg/kg/wk. Cidafovir is nephrotoxic and should be used along with oral probenecid.

While obviating some of the problems associated with intravenous administration, oral ganciclovir has biovailability of 9%[5]. It appears to be less effective than intravenous ganciclovir[6]. the oral form of the drug may lead to neutropenia in 14-24%[1] of patients. Oral ganciclovir is usually used for stable or healed CMV retinitis. A recent study designed to assess the efficacy and safety of oral ganciclovir (1 gm every 8 hrs), for the prevention of CMV disease in CMV seropositive, HIV infected persons with CD4+ counts less than or equal to 50 ul has shown CMV disease occured in 30% of placebo versus 16% of oral ganciclovir subjects. Ganciclovir was associated with a 49% risk reduction for the development of CMV disease.

Surgical therapies for CMV retinitis include intravitreal injection of antiviral drugs, implantation of intravitreal drug delivery devices, and surgical repair of CMV associated retinal detachment. Direct intraocular administration of ganciclovir has the benefit of achieving therapeutic levels by circumventing the insufficiency of ganciclovir in crossing blood retinal barrier. Moreover, the systemic exposure to ganciclovir following clearance from the eye is extremely small, avoiding associated adverse systemic effects. An unfortunate side effect of intravitreal therapy is that extraocular CMV infection may be more common and serious in the absence of the previously given systemic therapy. Clinically apparent extraocular CMV has been seen in approximately 1/3rd of patients receiving only local therapy. Studies have shown that injection of ganciclovir directly into the vitreous cavity is quite effective in delaying the

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progression of CMV retinitis[7]. Intravitreal Foscarnet is also being used with success in controlling CMV retinitis[8]. The short half-life of these drugs, however, necessitates administration of one or two injections per week to maintain therapeutic levels and multiple injections are associated with increased risk of endophthalmitis, retinal detachment and vitreous haemorrhage.

Cidofovir (20 ugm) can also be administered intravitreally, safely, once every 6 weeks, concurrent with one day course of oral probenecid pre and post injection to reduce complications. Extreme caution is advised if cidofovir is to be diluted for intravitreal use, because its therapeutic index is extremely narrow. Intravitreal doses of 40 ugm may cause permanent hypotony, where as doses of 10 mg or less may not be effective. Complications associated with the use of 20 mg every 6 weeks include, iritis which is usually manageable with topical steroids and cycloplegics. In addition, there is reproducible lowering of IOP, but symptomatic hypotony is rare.

A sustained release ganciclovir implant was developed for intravitreal implantation with the goal of achieving a large therapeutic effect and better control of CMV retinitis[9]. Studies have proved that ganciclovir implant prevents progression for 6-8 months in most patients with new onset of active CMV retinitis in a previously unaffected eye. The ganciclovir implant also appears to be effective in halting viral replication in eyes that have had previous treatment with intravenous ganciclovir[10]. Treatment failure rates with ganciclovir implant may be higher with re-implantation and in patients with resistant retinitis. In addition, retinal detachment has been seen in 11% to 18% of eyes following a ganciclovir implant procedure. Also there is very little data regarding the efficiency of ganciclovir implant in pressence of silicone oil.

Other new therapeutic approaches to CMV retinitis include a new class of drugs, "Antisense" compounds, that consists of oligo-nucleotide DNA sequences which block translation of proteins regulating virus gene expression. Monoclonal anti CMV antibody therapy is also under clinical investigation and is being used intravenously every 2 weeks as an adjuvant therapy to systemic anti CMV therapy. Lobucavir is a nucleoside analogue with in-vitro activity against several viruses including CMV. This drug is currently under trial for treatment. A halogenated benzamidazole developed by glaxo welcome, $GM_{1263}W_{94}$ oral is currently entering phase I/II trials. It is very active against members of herpes virus family, with more than 20 fold increase in activity against CMV than ganciclovir.

New treatment for CMV retinitis also may prove useful in other intraocular diseases. One can imagine an intraocular delivery device for anti-angiogenic compounds to treat diabetes or macular degeneration or anti-inflammatory compounds to treat macular oedema or uveitis; antiproliferative agents might be delivered to prevent or treat proliferative vitreoretinopathy or to aid in maintaining filtering belb in trabeculectomy patients. Long acting compounds may preclude the need for mechanical delivery devices. Liposome encapsulation is, for example, a potentially useful method to prolong the duration of action of intraocular drugs. New molecular approaches to treat ocular diseases have the potential to be highly specific with fewer side effects. One positive aspect of AIDS epidemic is that it has stimulated novel biologic and molecular approaches to disease with potential application to a wide range of ocular and systemic disorders.

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TOWARDS CONSUMER PROTECTION: A HOLISTIC APPROACH

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Human being is a born consumer. But in the present socio-economic conditions prevailing in the modern society, consumer is a victim of many illegal and unfair business practices. Today the innocent consumer due to his limited access to information is helpless than ever. She/he is more openly cheated in quantity, quality and price of goods or services. The consideration need to be given to basic issues like consumer educaion, access to adequate information and consumer rights, responsibilities and remedies to protect the consumer from defective goods or deficient services, overcharging of prices and exploitation.

Consumer means any person who buys any goods for a consideration which has been paid and partly promised, or under any system of deferred payment and includes any use of such goods other than the person who buys such goods for consideration paid or partly promised, or under any system of deferred payment which such use is made with the approval of such person, or hires any services for a consideration which has been paid or promised or partly paid and partly promised, or under any system of deferred payment and includes any beneficiary of such services other than the person who hires the service for consideration paid or promised, or partly paid and partly paid and partly promised, or under any system of deferred payment, when such services are availed of with the approvalof first mentioned person.

The definition of 'Quality' chosen by the European Organisation for Quality control and the American Society for Quality Control is: "Quality" the totality of features of a product or service that bears on its ability to satisfy given needs". This is essentially a transcendental view of quality, implying a sense of excellence.

Quality is related to the content of the product, conformance to specification for the product and what the consumer wants at the acceptable price. Quality improvements are therefore to be seen as increases in the conformance of a product or service or specifications which enhance the capability of a product or service to meet customer expectations.

Determinants of customer's perception of quality in service provisions include:

- Reliability
- Responsiveness
- Competence
- Access
- Courtesy
- Communication
- Credibility
- Security
- Understanding/knowing the Customer
- Appearance/Presentation.

There ae three characteristics of service-intangibility, herterogeneity and inseparability- which must be acknowledged for full understanding of service quality. Service quality judgements are considered to be driven by a comparison of consumer expectations with their perceptions of the actual service quality received.

In manufacturing, goods are made first and then sold and consumed so that the customer becomes significant during the final stage of the everall process. In the service industry, services are sold or contracted first and then produced and consumed with production and consumption possibly being simultaneous. For manufacturing, the implication of this distinction is that quality is essentially about conformance to product specification, whereas for the service industry, quality is essentially about the customer/user focus because this customer dimension is embedded in the whole transaction from initiation to completion in the service context.

Quality in Healthcare

Traditionally, the client has been viewed as a patient but not as a customer. It is the customer perspective of understanding which first needs the focus of quality assurance in health and the need for a customer focus requires careful explanation. Client satisfaction is of fundamental importance as a measure of the quality of care, because it provides information on health care provider's success at meeting those client values and expectations which are matters on which the client is the ultimate authority. The measurement of satisfaction is therefore an important tool for surveying and planning

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improved provision.

The scope of enhanced quality encompasses:

- ◆ Guarantee of adherence to legal requirements, national codes of practice and standards.
- ◆ The provision of systems to ensure quality (e.g. medical audit, clinical audit)
- ◆ The setting of specific standards as key indicators of performance on matters of general or specific concern.
- The setting of specific clinical outcome requirements.
- Consumer law, a general assumption of standards which could reasonably be expected from a hospital operating in a modern medical environment.

client satisfaction is of fundamental importance as a measure of the quality of care because it gives information on the provider's success at meeting those client values and expectations which are matters on which the client is the ultimate authority.

Quality medical care is the care that has the capacity to achieve the goals of both the physician and the patient. Quality medical care produces optimal improvements in the patient's health; emphasize the promotion of health and the prevention of disease; is provided in a timely manner; seeks to achieve the patients informed cooperation and participation in the care process and decisions concerning it is sufficiently documented to allow continuity of care and peer evaluation; and given an important place to the assessment of patient goals and values.

Meeting customer requirements at the lowest cost involves customer quality (whether the service given to the customers what they want as measured by customer satisfaction and complaints): professional quality (whether the service meets customer's needs as defined by professionals, and whether the professional standards which are believed to produce the required outcomes are observed): and process quality (which is the design and operation of the service process to use resources in the most efficient way to meet customer requirements).

Consumer Movement:

The Consumer Protection Act, 1986 has been enacted by parliament to provide for better protection of the interests of consumers and for that purpose to make provision for the establishment of consumer Councils and other authorities for the settlement of Consumer's disputes and for matters connected there with. The Act applies to all goods and services. A three-tier consumer disputes redressal machinary (Consumer Counts) has been set up as per the Act at the National State and District Level which provides inexpensive and speedy redressal to the Consumer disputes/Complaints in respect of defective goods, deficient services, unfair trade and restrictive trade practices, excess price charged, etc.

Consumers can file complaints on plain paper for compensation including cost upto Rs. 5 lakh in the District Forum, upto Rs. 20 lakh in the State Commission. No court fee, no lawyer required.

In order to encourage NGO's to participate in the Consumer Protection Programme, the Consumer Welfare Fund was set up in 1992 from which financial assistance is given for spreading consumer awareness/movement at the gross root level.

Doctors are liable under the prevailing laws such as Civil Penal Code, Indian Penal Code, law of contracts. Sale of Goods Act, Law of Torts and other specific legislation. Under section 304-A of the Indian Penal Code (IPC), the doctor who committed criminal liability is punishable with imprisonment for a term which may extend upto two years, or with a fine, or both. Civil liability arises in case of medical service rendered on payment of fee, under section 73 and 74 of the Indian Contract Act (L.D. 1992. Under Law of Torts (a wrong that is independent of contract) civil liability is applicable to doctors of all categories, that is, whether they provide their service for a fee or as charity without doctors committing professional misconduct and it can direct the removal of the name of any person enrolled in a State Medical Register on the grounds of professional misconduct. The above mentioned laws have some drawbacks such as_

1. Delay in Justice
2. Huge Legal Fee
3. Limited access to the courts.
4. Difficulties involved in providing both negligence and cause.
5. Deficiency in IMC Act.

Such as:

a) Lack of provision to receive complaints from patients.
b) To award any compensation when negligence is proved. Every profession has its guidelines and needs a security. Every professional body should ideally scrutinize whether their members are following the principles and practices as laid down by their ethics. Unfortunately MCI and other Associations have not been efficient, the only alternative is CPA 1986.

Citizen's Charters

With a view to provide a clean, effective and responsible administration at all levels with emphasis on transparency and accountability, the Department of Consumer Affairs (Ministry of Food & consumer Affairs, Govt of India) has begun to introduce Citizen's Charters in various Ministries/Departments where large Public interface is inolved. The charters incoprorate the citizen's entitlement to public services, access to information, simplified procedures of complaints, timebound redressal of grievances and provision for independent scrutiny of performances.

The Consumer Protection Act, 1986 provides the Consumer's right to safety, Information, Choice, Being heard at appropriate fora. To redressal, and to Consumer Education.

Prevention of Malpractice Litigation.

Following steps are required to prevent malpractice litigation:

- Good Communication and informed consent.
- Defensive medicine.

  (in order to protect themselves against over jealous patients's complaints, doctors have started practising defensive medicine. Practicing defensive medicine is not easy keeping in view the lower socioeconomic status of the patients coupled with illitracy, as it costs heavily the patient who can ill afford such a treatment approach).

- Quality assurance programmes including continuous quality improvement need to be introduced in all health care institutions.

- Medical audit and proper medical records is an inevitable necessity.

- Accreditation of hospitals to acheive and maintain optimum diagnostic and therapeutic standards.

- Medical Council should be better empowered. It should have a separate complaint cell to deal with cases of negligence and malpractice. This cell can have a retired judge and a prominant public figure as its members. This will minimise unnecessary litigation and provide true Justic Some innovative methods are being practiced in developed countries including.

- Medical indemnity insurance (it covers errors and omissions on the part of health care professionals).
- Counter suite

  (doctors initiate counter suits against patients for being sued on flimsy grounds).

A holistic approach is needed to strike a balance between the patient expectations (Concern) and professional duties being discharged by the clinicians (constraints).

SEVERE HYPERTRIGLYCERIDAEMIA WITH TAMOXIFEN

Shafiqa A.Tanki

The introduction of effective and non-toxic antiestrogen agents namely Clomiphene, Tamoxifen and Nafoxidine that block the actions of estrogen, has been relatively a recent event. These agents are nonsteroidal n their chemical nature and have become first-line therapy for the hormonal treatment of breast cancer, both for adjuvant treatment and for the therapy of metastatic disease. Out of them, Tamoxifen is preferred due to its elative lack of toxicity and its antiestrogenic effect is elated to its ability to compete with oestradiol for estrogen receptor protein. Tamoxifen citrate is an ffective, palliative treatment for patients with advanced reast cancer whose tumor is estrogen receptor (ER) ositive with either node positive or node negative isease[1,2]. It can also be used as an adjuvant in ostmenopausal women to prevent disease recurrence and urrently is under study as a chemopreventive in women t risk for developing breast cancer[3].

The most frequent adverse reactions to Tamoxifen nclude hot flashes, nausea and vomiting. These may occur h as many as 25% of patients and are rarely sufficiently evere to require discontinuation of therapy. Menstrual regularities, vaginal bleeding and discharge, pruritis ulvae and dermatitis have occurred less frequently. High oses of Tamoxifen can cause visual loss due to the ppearance of refractile opacities in the retinal epithelial igment layer with associated macular oedema and so an prolonged low dosage regimens of the same drug.

Like certain estrogens, Tamoxifen is considered to ave a positive impact on lipid status in postmenopausal omen. It lowers total serum cholesterol, LDL holesterol and lipoproteins and raises apolipoprotein AL evels, potentially decreasing the risk of myocardial nfarction[4]. Several publications however, show that amoxifen can lead to severe hypertriglyceridaemia in ome women treated for breast cancer, with a risk of ancreatitis.

After six months of treatment with 20mg/day amoxifen,a 61 year old Canadian woman's triglyceride evels rose from 3.50g/L to 27.9g/L(cholesterol levels ncreased from 3.04g/L to 4.92g/L)[5]. No other cause was found to this aggravation of the pre-existing hypertriglyceridaemia. Tamoxifen withdrawal and administration of a lipid lowering fibrate normalised both cholesterol and triglyceride levels.

A 36-year old Japanese woman with mild hypertriglyceridaemia received 20mg/day Tamoxifen as an adjunct to cytotoxic chemotherapy for metastatic breast cancer[6]. Four months later, the triglyceride levels reached 36.7g/L and this was followed by pancreatitis and fatal liver failure.

Similar cases have been observed in the United Kingdom and United States[7-9]. All involved women with initially moderate hypercholesterolaemia and hypertriglyceridaemia, were treated with 20 to 40mg/day Tamoxifen for breast cancer. Some developed abdominal pain or hyperamylasaemia[7,8]. In one case, the blood triglyceride level reached 60.9g/L (3.62g/L before Tamoxifen)[7] and in another case, hypertriglyceridaemia worsened rapidly (44.2g/L) after 4 years Tamoxifen therapy[8].

Triglyceride levels always normalised when Tamoxifen was withdrawn and a lipid-lowering fibrate was prescribed. In two cases in which a lipid lowering fibrate was prescribed but Tamoxifen was continued, the hypertriglyceridaemia fell to less than 5g/L[9]. These cases of severe aggravation of mild to moderate hypertriglyceridaemia do not call into doubt the positive risk benefit ratio of adjuvant Tamoxifen treatment for breast cancer.

Although it is difficult to make precise recommendations based on such a small number of reports, it seems advisable to monitor triglyceride levels in patients who have hypertriglyceridaemia before starting the treatment with Tamoxifen and in patients who have abdominal pain during treatment. The author in collaboration with Radiation Oncology department of S.K.I.M.S., Srinagar; has initiated monitoring triglyceride levels in patients of breast cancer on Tamoxifen citrate, to find out the incidence of hypertriglyceridaemia in our set up.

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MEDICAL TRANSCRIPTION - TELEMEDICINE OR JUST TELEWORKING?

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INTRODUCTION

The impression one gets from discussing Medical Transcription with doctors is that most of them think that it is a form of telemedicine that actively involves doctors in India. The actual fact is that the doctors who are involved work in hospitals in the U.S while the actual job of transcription is done by Medical Transcriptionists who are basically computer data entry operators with a good knowledge of medical terminology.

Medical Transcription means converting dictation by physicians and other healthcare professionals regarding patient assessment, workup, therapeutic procedures, clinical course, diagnosis, prognosis etc. into written form in order to document patient care and facilitate healthcare services.

A Medical Transcriptionist is a medical Language specialist who transcribes the recorded audio files into electronic data using a computer and accessories like headphones and a foot-pedal. This data is further scrutinized for grammar and accuracy by a proof reader at the Transcription Centre and is sent back to the doctor or hospital in electronic document form for filing and reference.

Many doctors in India have set up their own Transcription Centres to take advantage of their background in the field and the fact that they can use their contacts in the United States to channel business to them.

BACKGROUND

In the United States the Health care industry follows extensive documentation procedures due to the following three major factors :

1. The Health care industry is based on insurance and detailed medical records form the basis of insurance claims processing.
2. Medical practice is bound by a very strict code of ethics and statutes. These legal statutes and procedures are observed diligently since any lacunae can lead to multi-million dollar malpractice suits. Therefore a high level of documentation at every stage of treatment is the only way to ensure that timely medical care has been provided, thereby also proving non-negligence in treatment.
3. American Medical Association (AMA) has mandatory requirements for documentation on the part of doctors. This extensive documentation process can take up to 50% of a doctor's precious time. Since the medical profession is amongst the highest paid in the country, the time spent by them on documentation proves to be costly.

Therefore, the solution is that doctors dictate their reports since they can speak out instructions much faster and more conveniently than writing out the instructions. Doctors examine patients in hospitals and clinics and dictate important information about the patient's history, physical examination, diseases, procedures, laboratory tests and diagnoses into a dictating machine. These reports are stored in cassettes or computers as digital audio files.

The voice recordings of the doctors are sent to transcription centres in compressed form over high-speed data communication lines. These voice recordings are decompressed and the medical transcriptionists listen to these voice recordings using special playback equipment that allows precise control over the playback of the voice recordings and type in the data using word processing software into electronic document form for generating hard copy reports. Most of the words processing programs used in medical transcription process typically are accompanied by libraries / dictionaries of medical terminology. Transcription is done more efficiently with the use of a medical spell checker and an abbreviation system such as PRD or Smartype, etc.

This transcribed data is then proof-read for errors and is sent back over the same data communication links to the hub of the medical transcription network from where it is routed to the concerned doctor / hospital.

Typically there is a 10 fold saving in time and of course a much larger saving in effort for highly qualified professionals who are small in numbers and whose time is far more expensive.

Till recently transcription was done mostly in house but with increasing pressure on managed health care costs many hospitals are outsourcing to avail the services of professional transcription companies for converting audio

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to electronic document form and hard copy reports .The US requirement is currently serviced by transcription companies, casual transcriptionists and by in house teams. As per reports, more than 6700 hospitals in the US scramble to meet Federal Certification requirements to convert medical records to electronic formats. Employment of medical transcriptionists in the US is estimated at 270,000 while the availability is falling by approximately 10% per annum.

The availability of high-speed data transmission and the Internet have provided an opportunity to operate in a global and seamless environment from remote locations at a lower cost .This concept known as Teleworking or Remote Processing includes Transcription - which is the process of converting voice data into an electronic document which is used extensively in the medical, legal, broadcasting, law enforcement and insurance fields . Countries like India that are almost 12 hours apart in terms of time-zone from United States present an unusual opportunity - the medical voice files can be transmitted, transcribed using human operators, entered into computer terminals and re-transmitted back to the United States comfortably overnight without the operators having to work in the night shift !

JOB PROFILE

For a career in medical transcription, the mandatory academic requirements are excellent command over English, computer literacy with good keyboard speed , good listening skills and ability to comprehend spoken American English easily. In addition to this, it is a must for medical transcriptionists to keep themselves abreast with the latest developments in the medical world, the new medicines and researches coming up, and the latest technology in health sciences.

The job profile is more of a technician level and not programmer / analyst category. At entry level, medical transcriptionists can expect to earn between Rs. 5,000 - Rs.6,000 per month depending on the company. This figure can rise significantly with experience and increase in efficiency .An average transcriptionist outputs 400 lines per day and a good transcriptionist ouputs 800 lines per day.

Medical transcriptionists can specialize in transcribing voice-records in specific areas of medicine, such as surgery , radiology , cardiology et al. With a couple of years' experience, one can apply for certification as a Certified Medical Transcriptionist , and then as a Medical Language Specialist. Besides the basic salary, many companies offer perks and performance based incentives. Salaries rise depending on the individual performance and so do promotions, as one can become a quality analyst or proof-reader, which is a more convenient job than that of a medical transcriptionist, where one has to listen to the tapes constantly. Experienced Medical Transcriptionists may become team leaders, shift managers or editors in the same field and may even become teachers in Training Centres to help train future medical transcriptionists.

Several private training institutes have sprung up all over the country offering courses in Medical Transcription. The fee charged ranges between Rs.15,000 - 20,000 for a four month course .The course programme includes training on use of computers, getting accustomed to different accents of English spoken around the world, listening to dictation and transcribing the messages. The courses also familiarize the applicants with common medical terms.

INFRASTRUCTURE

To be successful, a medical transcription center needs to have a sophisticated infrastructure. The money per record is not very high so centers work on high volumes. To achieve high volumes, they need a large number of computers, many operators and usually have to work long hours. Many centers have shut down because their infrastructure was small and marketing weak.

The main components for setting up a Medical Transcription unit include:

Premises (Office Space)
Servers
Computers (with audio capabilities) and Pedal machines
Networking
Specialised software
Medical Transcription Programs
Telecom connectivity (ISDN / Leased Line / Internet)

Like any other IT Enabled Services business, it is important to have a certain critical mass in terms of capacity to be able to generate volume transactions. Research has shown that a given capacity of about 50 computers / transcriptionists is the minimum requirement which translates to a total capacity of 150 people working in a total of three shifts of eight hours each.

In order to establish capacity for 50 people, there would be investment needed of the order of Rs. 45 - 50 lakhs. Further manpower costs (for 150 people) would add about Rs. 1.2 - 1.5 crore to the total costs. In other words, an entrepreneur would need to have available funding of approximately Rs. 1.5 - 1.75 crore to cover asset building and recurring expenses for first year of unhindered operation for about 150 people. Further, with the above capacity, there would be a working capital requirement of at least Rs. 20 lakhs.

MARKETING

The best practice for marketing medical transcription services is to approach hospitals / doctors directly. However, in the beginning, entrepreneurs may find it difficult as it is important to build up sufficient experience and confidence before taking direct responsibility for execution of a project. Therefore, it is suggested that in the incubation stage, venture promoters may tie up with a larger medical transcription company in the capacity of an affiliate. Larger companies not only subcontract their orders, but also help to develop a venture into a self-sustaining affiliate by providing training and advisory services. These services may be offered for a nominal fee.

Over a period of time, as the company becomes well established, it may start to develop direct relationships with hospitals. This further helps to bypass intermediaries and improve margins. Companies may also consider opening an office in major markets, such as USA or Europe, to provide business promotion coverage to certain regions / states. The Internet can also be used as a useful resource tool for attracting potential business .

An aggressive marketing and sales team / network is a must in the US, either by having a tie-up with an American Transcription company or setting up one's own network focusing on cost savings and better turnaround times to clients.

CURRENT SCENARIO

GLOBAL OPPORTUNITIES

Globally, the untapped demand for Teleworking or Remote Processing is to the tune of $ 250 billion (Rs. 10,62,500 crores). In fact, it is larger than the comparable global software industry (Source: BusinessWorld)[1] .Out of this it is estimated that the current market size of the Medical Transcription industry is US$ 6.6 billion which includes US$ 1.3 billion in annual spending related to in patient hospitals stays, US$ 1.7 billion for interpretation of diagnostics and rest for outpatients hospital visits. About 50% (US$ 3.3 billion) is currently outsourced with small and medium businesses handling 80% of the outsourced work

While lots of work is available for Medical Transcription there are not enough people to do it. The availability of US transcribers has fallen by about 10% per year in recent years. The profession is not sufficiently attractive to draw adequate numbers of new entrants, especially since incomes are not commensurate with the long training that is involved. At the same time, the demand for medical transcription services is growing at about 20% per year largely due to the rising healthcare needs of an ageing population.The US Bureau of Labor predicts a 51% increase in the need of medical transcriptionists by the year 2008.

The fall in the supply of US transcribers and the growth of the medical transcription market means opportunities for other countries . India is currently the number one destination for medical transcription for American hospitals outside the US, followed by the Philippines. However, the amount of work currently done by overseas companies is estimated at less than 0.2% of the total; thus there is enormous potential for expansion.

INDIAN SCENARIO

There are a number of reasons why India has become an attractive location for medical transcription businesses, but the main advantages relate to costs and availability:

- The cost per line of medical transcription in India is almost half of that done within the US . The US agency charges its clients 12 cents per line of transcription and pays the Indian agency 5 to 6 cents per line for transcription. The American agency is immensely satisfied as they are getting 6 to 7 cents a line for simply channeling business to India . Again it is estimated that in the U.S , a medical transcriptionist gets between $36,000 and $50,000 a year, while in India it ranges from Rs. 60,000 to about Rs. 72,000 per annum to start with. This is where the business opportunity comes in for India. The cost of transcribing, which works out to a fraction of the cost in the US, has become the key reason for medical transcription orders being outsourced to Indian companies
- India possesses the largest English- speaking population among developing countries. At the last count, in the 1991 population census, there were 90 million English -speaking Indians. Thus India has a huge pool of English-speaking and computer-literate graduate manpower to cater to the growing demand.
- Besides cost, the 12-hour time difference between India and the US is a major competitive advantage. The voice data that flows in during US business hours can be transcribed in India when it is night in the US. Transcription is completed by 1730 hrs Indian time and the transcribed data is sent out to USA in time for their next working day.

According to the National Association of Software & Service Companies (NASSCOM), Teleworking or Remote Processing will generate more than 1.1 million jobs, earning a revenue of Rs. 55,000 crores bv the year 2008.(Source:NASSCOM McKinsey Survey 1999)[2]. NASSCOM projects that against the total Indian exports of about US $ 34 billion, medical transcription is expected to have a market potential of about US $ 17 billion to one country alone viz. the USA. Of the 700 million hospital events transcribed every year in the US, presently the contribution by India is only Rs. 140 crores, which amounts to just 0.165% .It is estimated that Transcription / Translation industry fetched revenues of Rs. 120 crore in 1999-2000 and employed over 5,000 people. Career experts say that the industry is poised to become a $10-billion industry in India, and jobs are increasing at the amazing rate of 25% per year. By the years 2007-8 the employment generated by Medical Transcription is projected to reach an astonishing 1,70,000 and the revenue generated by it would cross Rs. 9000 crores! It would then become the fourth highest foreign exchange earner for India after garments, diamonds, and software.

Over the past few years the Government of India has realized the necessity of high quality, high bandwidth connectivity which is increasingly available at all the Metropolitan cities. Naturally one finds concentration of medical transcription services in Delhi , Mumbai , Chennai and Hyderabad metropolitan areas confirming the healthy growth in the Medical Transcription industry in India. Currently there are more than 250 companies offering Medical Transcription services in India, employing between 5,000 and 8,000 people and producing total revenues of $25m-50m . The major companies number less than a dozen and there are three large foreign players: CBay Systems, HealthScribe and Heartland Information Services.

KASHMIR PERSPECTIVE

Medical transcription and other remote services enlarge the pyramid of potential employment within the broad scheme of IT . Medical transcription , which falls under the category of IT enabled services (ITES), truly opens up the IT boom as it generates larger job openings for people with limited abilities & training.

Services like medical transcription can be provided from any part of the country and are in no way limited to the cities. The economic boom that is seen in the Metropolitan cities can be replicated in states like Jammu and Kashmir since the infrastructure needed is not very demanding, except for high quality data lines to transmit data fast speedily, accurately and with guaranteed reliability.

Of course the J&K Government should recognize the tremendous employment potential and improve the power and telecom infrastructure in the Valley .It is already committed to setting up a Software Technology Park for IT projects and support for Medical Transcription services is a logical extension of the same . Requirements are access to clean and continuous power supply , reliable high-speed flexible bandwidth channels at internationally competitive rates and quality training programmes for medical transcription along with incentives for entrepreneurs along the lines of the recent policy announcement by Andhra Pradesh Government entitled. Incentive package for IT-enabled services (ITES)' which has come as a shot in the arm for those diversifying into this sector in that state.

FUTURE TRENDS

The demand for transcription services started when most doctors were not computer savvy. Today the doctors are much more comfortable with computers and a combination of hand-held devices and simpler ways of doing data entry are available .Therefore most critics of medical transcription predict that the business would evaporate soon after the computer scientists perfect speech recognition.

Speech recognition software has matured quite a lot and is improving by the day. Special medical software packages with voice recognition are already available with built-in dictionaries to recognize complex medical terminology . Speech recognition systems like 'Dragon' enable the doctor to speak into the computer and the software recognizes the spoken words and converts them into words that are directly entered into a machine-readable file (such as Microsoft Word file). So far, these programs are limited to a few specialties but are increasing in sophistication and range . The accuracy is high but even 99% accuracy would not be good enough since a 1% error would translate to about 20 errors in a page of 2000 characters - even poor quality typists do not commit that many mistakes. Though at present, voice recognition software has not developed to the extent that it is in wide usage in any industry, but as this technology matures, transcriptionists will be able to use it to increase their personal productivity, rather than considering it a threat to their jobs.

At present medical transcription companies are entirely focused on providing services to foreign hospitals. However, the opening of the health insurance sector in India, which will force hospitals to maintain a great deal of documentation for processing claims, offers significant scope for providing medical transcription services to hospitals within India itself in coming years. Moreover, the high cost of telecom bandwidth in India, which has in the past proved to be a bottleneck for medical transcription companies, is likely to fall in the near future following the entry of a number of private ISPs and increasing competition and investment.

Concern has been raised regarding the confidentiality issues over the Internet. New regulations in the future would make it mandatory for 128-bit encryption of patient records being transmitted over the Internet to uphold security. As per certain reports, legislation will soon be passed in the US that will require state-of-the-art security be in place for all transmissions of medical records. US and Europe have already signed data protection laws and it is expected that such laws will be introduced in India to maintain security and confidentiality.

It is therefore safe to assume that with significant wage differences and the availability of large pool of skilled people in countries like India, medical transcription and similar services will have significant market for many more years .The medical industry is immune to recession; the demand for medical services is around the year and hence all subordinate products and services such as medical transcription will never decline.

SUMMARY

A Medical Transcript is a permanent, legal document that formally states the result of a medical investigation .Medical Transcription is a process of converting medical information from audio form (recorded in cassette/ computer) into accurate medical reports in the text form (electronic and print).It flows from the need for documentation of medical records and the inability of hard-pressed doctors to sit and write those reports themselves. In Western countries, particularly the US, maintaining extensive medical records is mandatory-and vital-for each patient treated. The fact that medical insurance claims and lawsuits are decided on the documented case history makes this all the more necessary . Companies in the US are unable to handle voluminous transcription work in-house. Therefore, they prefer to outsource the work to minimise their administrative problems, reduce labour costs and achieve better efficiency.

To save time and effort doctors speak into a tape-recorder or voice recording PCs . The exhaustive oral reports are stored in a compressed format and transferred to India via high-speed data communication lines. The recordings are decompressed and the medical transcriptionists in India listen to these voice recordings and type in the data using word processing software. This data is then proof read for errors and is sent back to the US company or hospital in electronic document form for filing and reference.

The amazing growth in telecommunications and information technology and free trade in services in recent times is redefining the frontiers of local and national markets .It offers unprecedented opportunities to access the world market thereby giving India its biggest business opportunity ever - Teleworking or Remote Processing, and Medical Transcription is a major part of this new opportunity. India, given the high number of English-speaking graduates , high computer-literacy levels, the weak rupee, and an ideal 12-hour time difference provides the ideal location for providing Medical Transcription services.

Since Medical Transcription is a 100% export oriented industry and is still in its infancy, it offers tremendous growth opportunities . Large healthcare multinationals and Indian blue-chip conglomerates are setting up transcription facilities in India .A lot of job opportunities exist even in smaller states like Jammu and Kashmir provided the local governments are farsighted enough to create the right atmosphere for these services to flourish.

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SLIDE PRESENTATION

MANAGEMENT OF ACCIDENTAL SPILLS, NEEDLE STICK INJURIES AND OTHER UNTOWARD EVENTS (OCCUPATIONAL EXPOSURE) POST EXPOSURE PROHYLAXIS GUIDELINES

INTRODUCTION

Health care workers (HCW) are normally at a very low risk of acquiring HIV infection during management of the infected patient but the statistical risk of acquisition of HIV, coupled with absence of a vaccine or effective curative treatment makes the health care worker (HCW) apprehensive. So it is very necessary to have a comprehensive programme in place to deal with any accidental exposures to HIV.

Most exposures do not result in infection. The risk of infection varies with type of exposure and factors such as:

- The amount of blood involved in the exposure
- The amount of virus in patient's blood at the time of exposure.
- Whether PEP (Post exposure prophylaxis) was taken timely.

Average risk of acquiring HIV infection after a needle stick injury is 1:300 (0.3%) while for HBV it is 9-30% and for HCV, it is 1-10%.

Prevention is the main stay of strategy to avoid occupational exposure to the HIV.

1. USE OF PROTECTIVE BARRIERS

Whenever exposure to blood/other potentially infected fluid is anticipated, protective barriers must be used.

a) Latex or vinyl gloves must be worn while carrying out any procedure and be decontaminated after each use. Gloves with holes should not be used. Double gloves are not preferred as it is not more protective than single glove & it may be more clumsy. Heavy duty rubber gloves be used for cleaning instruments, handling soiled linen or spills of blood/body fluids. These can be washed & reused.

b) Gloves & aprons protect one from splashes of blood or body fluids e.g. during surgery/delivery. One may wear a waterproof gown or a sterile cloth with a plastic apron underneath. Protective eye wear may be used to prevent transmission by splash of fluids to mucous membrane.

2. SAFE HANDLING OF SHARPS

a) Careful needle handling is very essential as it may lead to deep penetrating injuries.

b) The needles should not be recapped. In situations where recapping is essential, use single hand method.

c) Needles should not be left on trolleys & beds and must be safely disposed off immediately after use.

d) Never pass used sharps from one person to another directly.

e) Use forceps instead of fingers for guiding sutures.

f) The sharps should be disposed off in a puncuture resistant container.

WHAT SHOULD BE DONE AFTER EXPOSURE TO THE BLOOD OF A PATIENT?

1. Immediately following an exposure to blood:
   - Needlestick injuries and cuts should be washed with soap and water;
   - Splashes to the nose, mouth or skin, should be flushed with water;
   - Eyes should be irrigated with clean water, saline, or sterile irrigants;
   - Do not put the pricked finger in mouth

JK-Practitioner 2001; 8(2): 124 - 128

Reproduced from "Specialists' Training and Reference Module" a National AIDS Control Organisation (NACO) Ministry of Health and Family Welfare Govt. of India Publication, on the Advice of Dr. Munir Masoodi Head Deptt.of SPM GMC, Srinagar who is the co-ordinator AIDS control programme, to give wide coverage to this topic.

reflexly.

No scientific evidence shows that the use of antiseptics for wound care or squeezing the wound will reduce the risk of transmission of HIV. The use of a caustic agent such as bleach is not recommended.

2. FOLLOWING ANY BLOOD EXPOSURE YOU SHOULD:

◆ Report the esposure to the appropriate authority and condition must be treated as an emergency. Prompt reporting is essential because in some cases, HIV postexposure prophylaxis (PEP) may be recommended and it should be started as soon as possible-preferably within 2 hours.

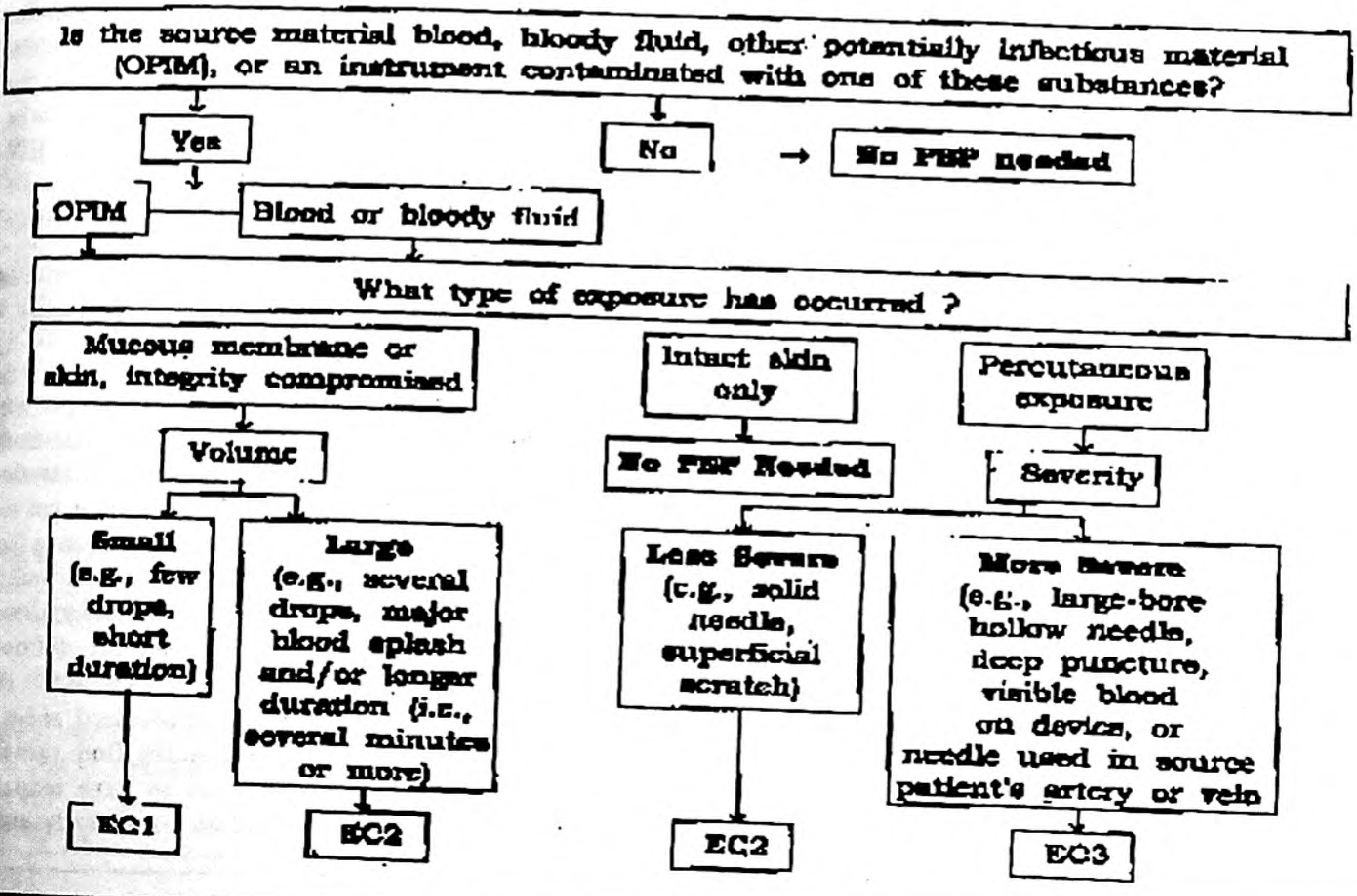
Based on animal models, the success of PEP therapy is maximal when started within a matter of hours after the exposure. Although, any time cutoff is arbitrary, we do not recommend initiating treatment more than 72 hours after the exposure. Although perhaps not as effective as prophylaxis, late PEP (after 72 hours) may still be useful as early treatment.

IS POSTEXPOSURE PROPHYLAXIS RECOMMENDED FOR ALL TYPES OF OCCUPATIONAL EXPOSURES TO HIV?

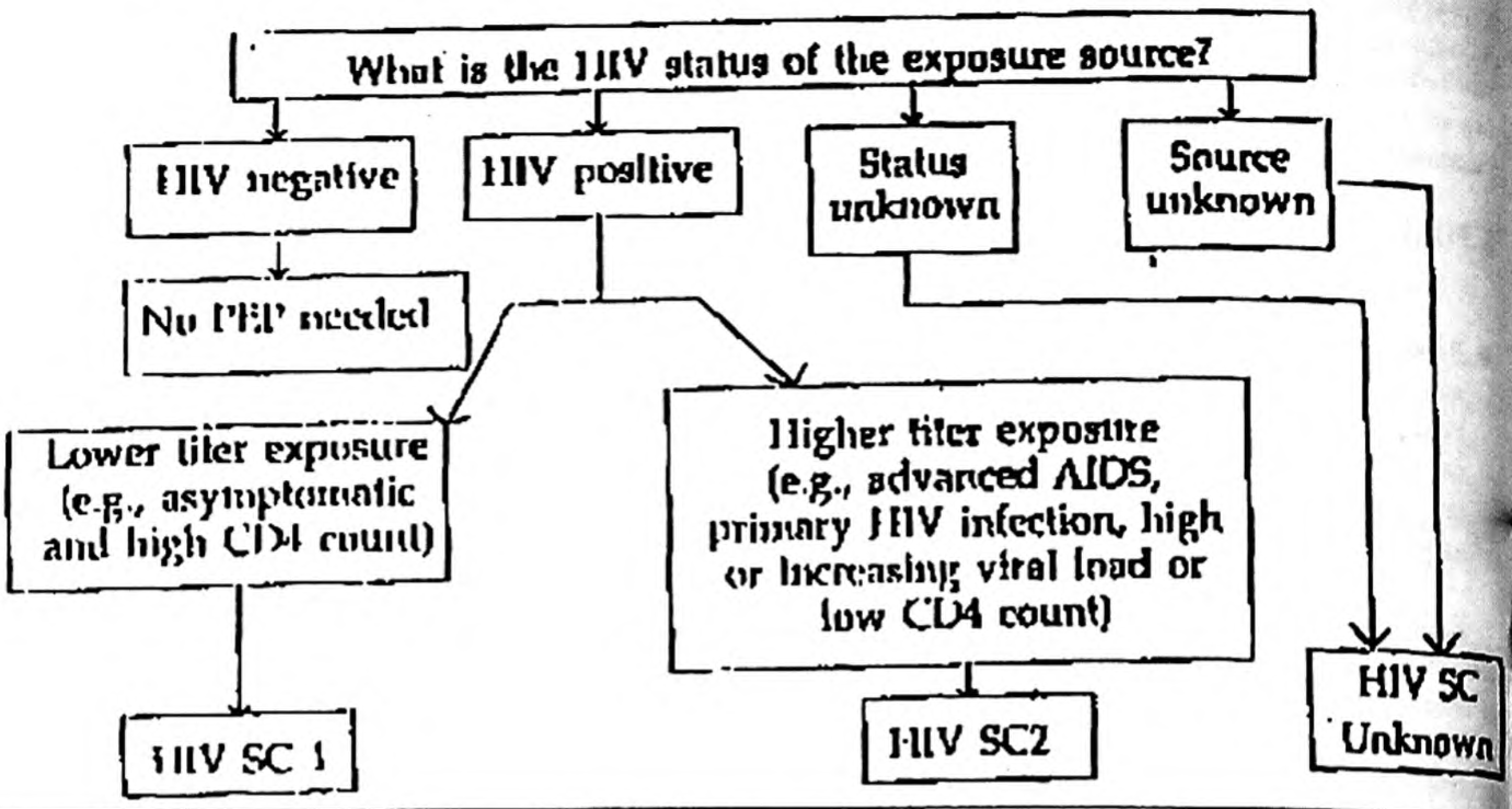
No. Becuase most occupational exposures do not lead to HIV infection, the chances of possible serious side effects (toxicity) from the drugs used to prevent infection may be much greater than the chance of HIV infection from such exposures. Both risk of infection and possible side effects of drugs should be carefully considered when deciding whether to take postexposure treatment or not.

Highlight prophylaxis the decision to start PEP is taken after determining the severity of exposure (Exposure Code) and HIV status (Status Code) of infecting source determined as per Step 1 and 2 and then the two are corroborated as per Step 3.

STEP 1: DETERMINATION OF THE EXPOSURE CODE (EC)


Is the source material blood, bloody fluid, other potentially infectious material (OPIM), or an instrument contaminated with one of these substances?
Yes
No
No PEP needed
OPIM
Blood or bloody fluid
What type of exposure has occurred ?
Mucous membrane or skin, integrity compromised
Intact skin only
Percutaneous exposure
Volume
No PEP Needed
Severity
Small (e.g., few drops, short duration)
Large (e.g., several drops, major blood splash and/or longer duration (i.e., several minutes or more)
Less Severe (e.g., solid needle, superficial scratch)
More Severe (e.g., large-bore hollow needle, deep puncture, visible blood on device, or needle used in source patient's artery or vein
EC1
EC2
EC2
EC3

STEP 2: DETERMINATION OF TAHE HIV STATUS CODE (HIV SC) OF SOURCE


What is the HIV status of the exposure source?
HIV negative
HIV positive
Status unknown
Source unknown
No PEP needed
Lower titer exposure (e.g., asymptomatic and high CD4 count)
Higher titer exposure (e.g., advanced AIDS, primary HIV infection, high or increasing viral load or low CD4 count)
HIV SC 1
HIV SC2
HIV SC Unknown

STEP 3. DETERMINE THE PEP RECOMMENDATION

EC	HIV SC	PEP recommendation
1	1	PEP may not be warranted. Exposure type does not pose a known risk for HIV transmission. Whether the risk for drug toxicity outweighs the benefit of PEP should be decided by the exposed HCW and treating clinician.
1	2	Consider basic regimen. Exposure type poses a negligible risk for HIV transmission. A high HIV titre in the source may justify consideratioin of PEP. Whether the riskfor drug toxicity otuweighs the benefit of PEP should be decided by the exposed HCW and treating clinician.
2	1	Recommend basic regimen. Most HIV exposures are in this category; no increased risk for HIV transmission has been observed but use of PEP is appropriate.
2	2	Recommend expanded regimen. Exposure type represents and increased HIV transmission risk.
3	1or 2	Recommend expanded regimen. Exposure type represents an increased HIV transmission risk.
2/3	UNKONWN	If the source, (in the case of an unknown source), the setting where the exposure occurred suggests a possible risk for HIV exposure and if the EC is 2 or 3, consider basic regimen.

WHAT ABOUT EXPOSURES TO BLOOD FOR WHICH THE HIV STATUS OF THE SOURCE PERSON IS UNKNOWN?

If the source individual cannot be identified or does not give consent to be tested, decisions regarding follow-up should be based on the exposure risk an whether the source is likely to be a person who is HIV positive. Follow-up HIV testing should be available to all workers who are condemned about possible HIV infection through occupational exposure.

PRE AND POST TEST COUNSELLING AND TESTING

The person should be provided with pre test counselling and subjected to HIV test (base line) and later at 6 weeks, 12 weeks and 6 months following the exposure. In case person is put on PEP, he is given post test counselling. During the follow-up period, especially the first 6-12 weeks when most infected persons are expected to show signs of infection, one should follow recommendations for preventing transmission of HIV. These include refraining from blood, semen, or organ donation and abstaining from sexual intercourse. If one chooses to have sexual intercourse, a latex condom consistently and correctly may reduce the risk of used HIV transmission. In addition, women should not breast-feed infants during the follow-up period to prevent exposing their infants to HIV in breast milk.

Zidovudine has been found to be quite effective in reducing the chances of person's becoming positive (as high as 79% reduction). The following regimens are used:

1. Basic Regimen: Zidovudine 300 mg x Bd + Lamivudine 150 mg x BD
2. Expanded Regimen: Basic Regimen + Saquinavir 600 mg TDS (or any one protease inhibitor)

HOW LONG DO THE DRUGS NEED TO BE TAKEN?

The optimal course of treatment is unknown; but 4 weeks of PEP appears to provide good enough protection against HIV infection. If tolerated, treatment should be taken for at least 4 weeks.

SHOULD PREGNANT HEALTH CARE WORKERS TAKE THESE DRUGS?

Based on limited information, ZDV taken in 2nd and 3rd trimesters of pregnancy has not caused serious side effects in mothers or infants. There is very little information on the safety of ZDV when taken during the Ist trimester or on the safety of other antiviral drugs taken during pregnancy. If one is pregnant at the time of occupational exposure to HIV, one should consult a physician about the use antiviral drugs for post exposure treatment.

WHAT IS KNOWN ABOUT THE SAFETY AND SIDE EFFECTS OF THESE DRUGS?

Most of the information known about the safety and side effects of these drungs is based on studies of their use in HIV-infected individuals. For these individuals, ZDV and 3TC have usually been well tolerated except nausea, vomiting diarrhoea, tiredness, or headache.

WHAT SHOULD THE INFECTION . CONTROL OFFICER DO ON RECEIVING INFORMALTION ABOUT OCCUAPTIONAL EXPOSURE?

1. All the needle stick injuries ~~should~~ be reported to State AIDS Society in the Performa enclosed.
2. The State AIDS Societies should in turn inform NACO about the cases periodically.
3. A registry is planned to be opened in NACO soon for follow-up of a such cases.
4. NACO has decided in principle to supply drugs (ZDV or ZDV+3TC (whenever applicable)) to all cases of PEP.

ANNEXURE - I

NEEDLE STICK / SHARP INJURY PROTOCOL

ame of H.C.W. :
ction of HCW :
ployment No. :
te of Needle Stick / Sharp Injury :
te of Reporting to Casualty :
te & Depth of Injury :
tue of Injury : Needle Prick /Sharp Cut/Leceration / Splash of Fluids/ Splattered Glass

tion taken in casualty :
p. B. Vaccination given : Yes / No.
IG : Yes / No.

story of Injury
story of Heptitis B Immunization : Date of Intradermal / IUntramuscular
ti HBS Titre (Date of Recent)
HBsAg : Yes / No
HIV : Yes / No.

urce of Injury (If Available)
um sent for (reports to be entered in follow-up visit).
HIV
HBsAg

ANNEXURE - II

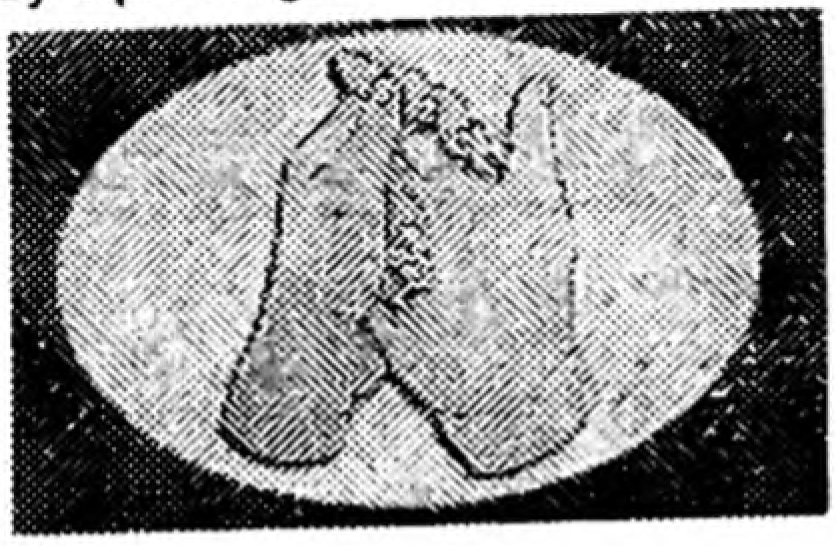
MANAGEMENT OF SHARPS ACCIDENTS

Each health facility should develop standard operating procedures to be followed by all health personnel in the case of sha injury or other exposure.

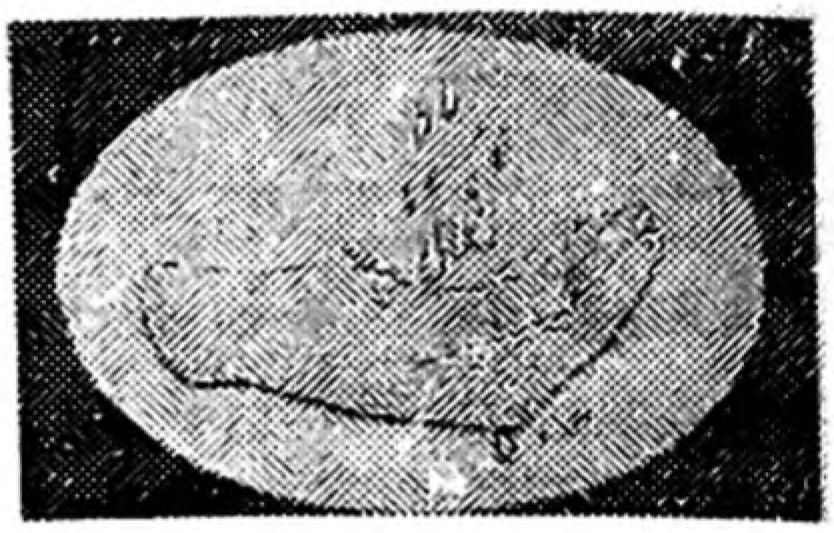
In case of injury with a used needle or other sharp or if blood/body fluid is splashed into the mouth, eyes or onto broken s carry out the following procedure.

1. Neeclepricks, cuts, bites or scratches.

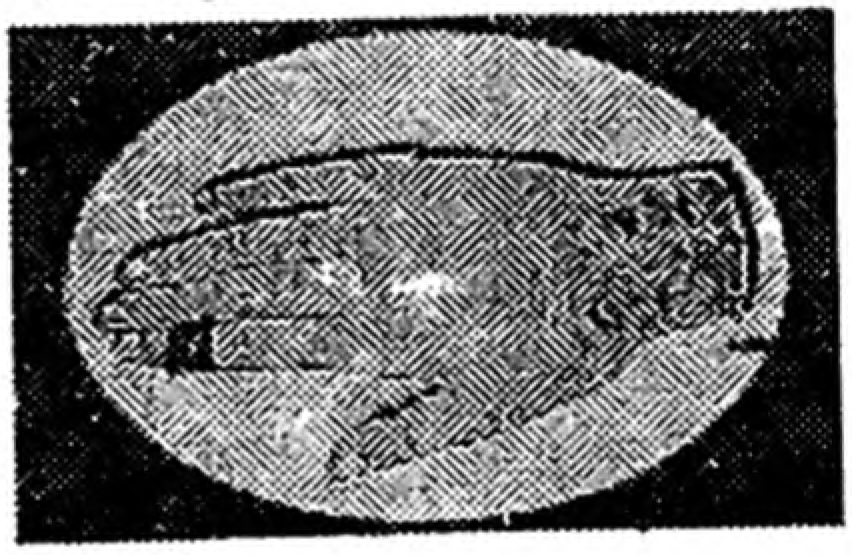
(a) Encourage bleeding by squeezing.



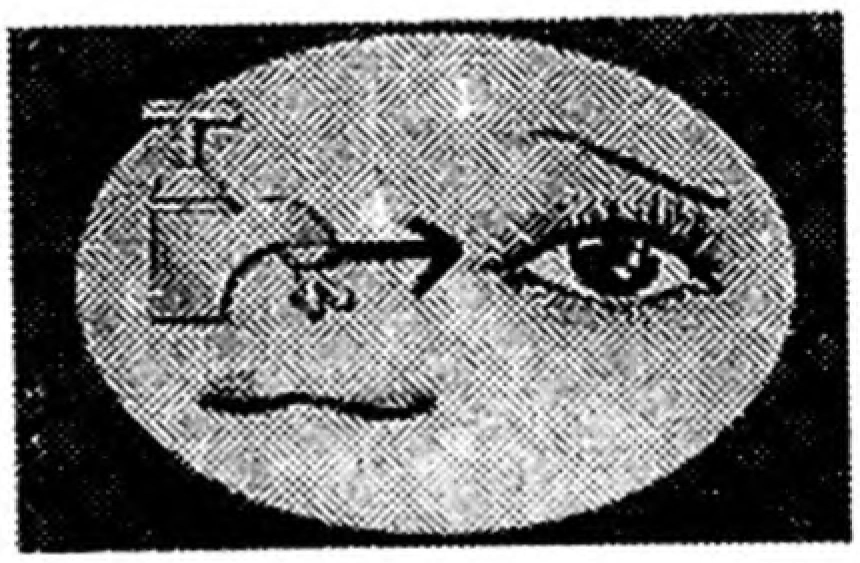
(b) Wash thoroughly with soap and water.



(c) Cover with a waterproof dressing.



2. Splashes to mouth or eyes.
Rinse thoroughly with plenty of runningwater.



LETTER TO THE EDITOR

Sir

Let me pont out some glaring problems with the article *"Tablet Treatment of Type 2 Diabetes Mellitus" (JK-Practitioner 2001; 8(1): 10-14*

1. Troglitazone is no longer available to treat diabetic patients. It was withdrawn from the market in the USA last March. Other two drugs available now-Rosiglitazone, and Pioglitazone have not even been mentioned in the review.
2. Nateglinide is not a thiozolidinedione. It is an amino acid (d-phenylalanine) and falls under the category of non-sulfonylurea insulin secretagogues. It has already been introduced into market as Starlix.
3. Important instruction for patients taking alpha glucosidase inhibitors is missing (taking drug with the first bite of meal, otherwise it won't work)
4. We no longer use Roman numerical to designate the type of diabetes. It has been replaced by Arabic numercal (Type-1, Type-2).

Romesh Khardori, MB., MD., FACP., FACE
Vice Chairman
Department of Internal Medicine
Southern Illinois University.

DR. B.C. ROY NATIONAL AWARD

List of Awardees - 1999

(1) Medicalman -cum-Statesman

Dr. Farooq Abdullah
Hon'ble Chief Minister of
Govt. of Jammu & Kashmir,
Vir Marg, Jammu-Tawi, &
40, Gupkar Road,
Srinagar (Kashmir)

(2) Eminent Medicalman

Dr. Hari Gautam
Chairman,
University Grants Commission,
Bahadur Shah Zafar Marg,
New Delhi 110 002.

(B) To Recognise the Merit of an eminent Medical Teacher:

1. Dr. D.P. Baksi
professor of Orthopaedics,
DA-3, Sector-I, Salt Lake City,
Calcutta-700 064.

2. Dr. B.M. Hedge
Vice-Chancellor,
Manipal Academy of Higher Education
(Deemed University(, Manipal,

3. Prof. C.M.K. Reddy
Hony. Prof. of Surgery &
Hony. Surgeon,
Stanley MEdical College & Hospital,
Chennai-600 001.

4. Dr. S.C. Mathur
Shiv Sadan, Near MLA Colony,
M.I. Road, Jaipur - 302001.

(C) To Recognise the best talents in encouraging the development of specialities in different branchies of medicine

1. Dr. B.S. Singal
Prof. & Head of Neurology,
Bombay Hospital Insititute of Medical
Sciences, Mumbai - 400 020.

2. **Dr. Ramesh Chandra**
Prof. & Head of Plastic &
Reconstructive Surgery,
Principal & Dean,
K.G.'s Medical College,
Lucknow.

3. **Dr. Upendra Kaul**
Batra Heart Centre, Batra Hospital &
Medical Research Centre,
1, Tughlakabad Institutional Area,
New Delhi - 110 062.

4. **Dr. S.S. Bapat**
Consultant Urologist,
Dr. Bapat Clinic,
796/3, Ketbar Road,
Opp. Kamal Nehru Park,
Pune.

D) To recognise the Outstanding service in the field of socio medical relief

1. **Dr. Hiralal B. Shah**
"Gagan Clinic"
Kharivav Road, Opp. Police Ground,
Raopura, Baroda - 390 001 (Gujarat)

2. **Dr. (Brig). M.L. Kataria**
House NO. 89, Sector 16-A,
Chandigarh.

3. **Dr. K.A. Ashok Pai**
Manasa Nursing Home Hospital,
Ist Cross Road, Shimoga - 577 201.

E) Oration

1. **Dr. B.C. Das**
Deputy Director & Chief,
Divsion of Molecular Oncology of
Institute of Cytology &
Preventive Oncology
of Indian Council
of Medical Research,
Ansari Nagar,
New Delhi 110 029.

F) Silver Jubilee Research Award

1. **Dr. Y. Chawla**

Prof. and Head of Hepatology
PGIMER, Chandigarh.

G) Hariom Ashram Alemic research award - 1999

Basic Research in Medical Sciences
Prof. K.A. Balasubramaniam
Prof. of Biochemistry

NOTICE:

The publisher of JK-Practitioner group will be coming out with supplementary issues on Dental and Nursing Medicine very soon (twice in a year) to help CME in these specialities.

Please Note:

1. Doctors/Nurses both in teaching and Health Services Department can apply for:-
   To be on Editorial Board/ Honorary Dy. Editor posts (send copy of CVT) and also as reviewers.
2. Send Review Articles / Editorials/ Illustrations/ Case Reports etc. on dental and Nursing Medicine.
3. Any suggestions which can be incorporated for better quality of these issues in future.
4. Marketing Manager/ Agents in J&K State (send CVT and experience certificates) and proof reading are required.
5. Advertisements of Dental, Nursing and other scientific products are invited.

For details write to Chief Editor JK-Pratitioner P.O.Box No. 884, G.P.O. Srinagar. Kashmir.

Sd/-
Exedutive Editor,
JK-Practitioner.

CURRICULUM VITAE

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President MCI,
& IMA (India)

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E-mail	:	ketan@wilnetonline.net
Educational Qualification	:	1. M.B.B.S. 2. M.S. (General Surgery) 3. M.Ch (Urology)
Present Position	:	Professor & Head, Department of Urology, B.J. Medical College & Civil Hospital, Asarwa, Ahmedbadad - 380 016.

Honorary Positions Held:

1. President, Medical Council of India, New Delhi.
2. President, Gujarat Medical Council
3. Member, Institute body of Post Graduate Institute of Medical Education & Research, Chandigarh.
4. Member, Institute Body, All India Institute of Medical Sciences, New Delhi.
5. Member, Drug Technical Advisory Board, New Delhi.
6. Presently National President, Indian Medical Association, New Delhi (2001).
7. Member, Governing Body of Indian Council of Medical Research (ICMR).
8. Member, Governing Body, National Board of Examination (DNBE).
9. Dean, Faculty of Medicine, Gujarat University (1991-1997).
10. Member, Board of Management, Baba Farid University of Health Sciences, Faridkot, Punjab.

11. Member, Governing Body, Ramachandra Medical College & research Centre (Deemed University), Madras.

12. Member, Governing Body, Nizam's Institute of Health Sciences, (Deemed University), Hyderabad.

13. Member, Governing Body, Shree Venkateshwara Institute of Medical Sciences, Tirupati.

14. Member, Executive Council, Gujarat University.

15. Member, Academic Council, Gujarat University.

16. Court Member, Gujarat University.

17. Chairman, Clinical Board of Studies, Gujarat University.

18. Member, Clinical Board of Studies, Gujarat University.

19. Member, Board of Studies (Clinical), Sardar Patel University (1992-1995).

20. Member, National Commission on Population, Govt. of India.

Honours Conferred:

1. Fellowship ad hominem of the Royal College of Surgeons of Edinburgh (FRCS), U.K.

2. Dr. B.C. Roy National Award for eminent Medical Teacher of The Country, For the Year 1995.

3. Visiting Professorship, By the Tamil Nadu Dr. M.G.R. Medical University, Chennai.

4. Special Award to Eminent Medical men for distinguished achievement of Highest order, for the year 1996 by Indian Medical Association, New Delhi.

5. IMA Dr. A.K.N. Sinha National Award for distinguished services to medical Profession, for the year 1997, by IMA, New Delhi.

List of Research Papers published and read in brief:

1. Three Papers read in 25th National Conference of Urology in 1992 in Kanyakumari, India.

2. Four Papers read in 26th National Conference of Urology in 1993 in Pune, India.

3. Four Papers read in Westzone Chapter of Urology, Rajkot in 1993.

4. Two papers read in West Zone Chapter of USI in Kolhapur in 1994.

5. Two papers published in National Journal of Urology, India.

6. One paper published in British Journal of Urology

7. One paper published in Indian Journal of Surgery

From the chief Editor .

I am greatly thankful to Dr. Ketan Desai President of Medical Council of India (MCI) and the President of Indian Medical Association (IMA) for sending this excellent breif CV for our readers. We will be interviewing him regarding the activities of MCI & IMA, for the coming issue.

CURRENT ROLE OF TRANS RECTAL ULTRASONOGRAPHY (TRUS) OF PROSTATE

Wani M. Saleem; P.B. Singh; U.S. Dwivedi

Introduction

Ultrasonics is a branch of acoustics that deals with the study of sound waves with frequencies above those within hearing range. Clinical ultrasound has its origin in the wake of Titanic disaster of 1912, when efforts began to develop a method of detecting under sea obstacles. During World War II, the Principals of ultrasonics were used to develop SONAR (Sound Navigation and Ranging). The ultrasonography in urology was first applied to kidney and bladder in 1950's and the rapid technological development has substantially increased the potential value of ultrasound in urology.

Trans rectal ultrasonography (TRUS) of the prostate is a rapidly advancing modality with growing acceptance and importance for diagnosis and management of prostatic disease. Since its clinical application in 1971 by Watanabe[1], TRUS has now developed into a sophisticated technology. TRUS of prostate is basically an extension of digital rectal examination (DRE) of prostate. Recent advances in real time ultrasound have significantly improved dynamic imaging. Current high resolution probes provide excellent visualization of the infrastructure of the prostate corresponding to McNeal's concept of zonal anatomy.

The TRUS image of the prostate is simply a picture of the low power microscopic anatomy of the gland. The transition zone (TZ) produces a hypoechoic image compared with generally isoechoic peripherial zone (PZ). The normal PZ and central zone (CZ) has a relatively homogenous texture corresponding to the uniform distribution of the glands in this area.

TRUS provides excellent visualization of the prostate, seminal vesicals, ejaculatory ducts and ampulla and useful information about their pathological process.

Indications of the TRUS

1. Abnormal DRE
2. Elevated serum PSA level.
3. Symptoms and signs of carcinoma prostate (Ca.P.)
4. Symptoms of bladder outlet obstruction due to BPH.
5. Follow up of patients after radical prostatectomy
6. TRUS guided biopsy of suspicious lesions of the prostate.
7. Monitoring the prostate volume in Ca.P. after hormone therapy.
8. Evaluation of male infertility.
9. Recurrent UTI in men due to acute or chronic prostatitis.
10. Therapeutic aspiration of prostatic abscess. Prostatic cysts, mullerian duct cysts and tejaculatory duct dusts.

Contraindications to TRUS

1. Acute painful perianal conditions like anal fissures, perineal abscess
2. Rectal cancer.
3. Loaded rectum which mechanically interferes with the study.
4. post operative anal stenosis.

Complications of TRUS

1. Self limiting hematuria
2. Self limiting hematospermia
3. Bacteraemia and fever after TRUS biopsy.

TRUS probes

Prostate is imaged in both transvers and sagittal planes. Three types of transducers are available.

a) Radial arrays in which transducer rotates 360°
b) Sector arrays where oscillation is right, left, cephalad and caudal
c) Linear arrays where piezoelectric crystals are placed in a line.

Current transducers are of high resolution with ultrasonic frequency of 5 to 10 MHZ with 7 MHZ giving the best image with sharp resolution. The probe is provided with a water balloon which is inflated after insertion. This lifts off the anterior rectal wall and provides an interface for visualization of the peripheral zone. There is a 14 G biopsy guide in the probe for endorectal biopsies or a template for transperineal biopsies.

JK-Practitioner 2001; 8(3): 133-135
From the Department of Urology (Saleem, Singh, Dwivedi) Banaras Hindu University, Varanasi
Received August 1999 **Accepted May 2001**
Correspondence: Dr. Wani M. Saleem, C/o Room No. 7, Old Doctors Hostel, Banaras Hindu University, Varanasi - 221005

Prostate Volume

The estimation of prostate volume may be useful in several ways. A precise estimation of amount of BPH would help to decide the appropriate therapy and assist in the interpretion of serum PSA level for presence of cancer[2]. Also, any decrease in the prostate mass after hormonal manipulation or radiation therapy can be used to indicate therapeutic efficacy[3]. An accurate estimate of prostatic volume only seems possible by TRUS. The three most commonly used methods to estimate the size of the prostate are planimetric method, use of three diamensions of the prostate and ellipsoid method. To overcome the inaccuracy of measuring prostate volume, an automatic method has been investigated based on planimetric volumetry[4]. This method is a useful tool in objective determination of the PSA level in proportion to the prostate volume[5].

Prostate biopsy

The presence of prostate cancer can be established only by tissue sampling and a histological analysis. Using automatic spring loaded biopsy gun and an 18 GG biopsy needle, the urologist can take multiple small cores of tissue from precisely identified regions of the prostate. This procedure can be accomplished rapidly without anaesthesia and without morbidity[6].

Approaches to biopsy include 'random systematic' or 'directed ultrasound guided biopsies'. If the lesion is visible then obviously it should be biopsied. If no lesion can be detected and prostate cancer is suspected, then random sexatent biopsy should be considered. Additionally, the extent of tumor in each biopsy core has been used to indicate the tumor volume[7]. Random systematic TRUS guided biopsies can detect 68% of cancers arising in PZ, and the 8% of cancers arising in CZ, but can not help in the 24% that arise in TZ.

TRUS pattern in BPH

i. TZ increases in size and compresses PZ. This gives rise to 'wing sign' or 'W-sign'.

ii. TZ consists of mixed, heterogenous, hypoechoic perenchyma arranged into one or more hyperplastic nodules. This contrasts with homogenous, more echogenic PZ. The enlargement may be assymetric. Because of this heterogenicity of BPH diagnosing Ca.P. in TZ is difficult.

iii. Multiple calcifications between TZ and PZ.

TRUS pattern of Ca.P.

i. The earliest change is a little assymetry of the gland and distorted architecture which may represent 'Isoechoic' Ca.P. (30% of patients).

ii. Commonest lesion is 'hypoechoic' (70%) in comparision with surrounding PZ.

iii. 1-3% patients show predominantly 'Hyperechoic' lesion.

iv. Capsular bulging and irregularity associated with adjacent focal hypoechoic lesion indicate capsular invasion.

v. Local extension of the growth through the areas of capsular weaknesses leading to loss of 'beak sign', obliteration of 'trapezoid area' and the invasion of neurovascular bundles and bladder neck.

vi. Neurovascular bundle and dorsal vein complex can easily be identified on colour doppler ultrasound. Normally, scattered flow is seen within prostate. Ca.P. has increased blood flow within the lesion and adjacent to the tumor. This increased vascularity in Ca.P. helps to direct TRUS-guided biopsies in those with increased serum PSA level with no hypoechoic or palpable nodule.

TRUS aided Therepies

Recently, two applications of ultrasound in the treatment of Ca.P. have been reported: viz. Cryosurgery of prostate and high intensity focussed ultrasound (HIFU). With the advent of TRUS the significant local complications resulting from inaccurate positioning of the probe and inadequate control of the ablation have markedly decreased. Modern ultrasound allows precise placement of the percutaneous probe and accurate regulation of freezing zone, resulting in maximum destruction of the prostate and minimum ablation of the surrounding tissue[8].

Future Developments

Apart from therapy of prostatic diseases, TRUS may be applied in the diagnosis of prostate related abnormalities like evaluation of male infertility especially in those with low volume ejaculate with oligo-azospermia and congenital absence of vas deference.

Ultrasound aided urodynamic investigations is an alternative to radiographic cystometry.

Color doppler ultrasonography can be used to differentiate Ca.P. from benign process and study the vascularization of prostate and the outcome of heat treatment in patients with BPH[9].

Recently, automatic image analysis in the interpretation of TRUS images of the prostate has been reported and it is presumed that this method can help in diagnosis of Ca.P.[10]

Discussion

The use of TRUS has increased rapidly since its introduction. Over the past few years, there has been much interest and enthusiasm directed towards defining both the values and the limitations of TRUS. Whereas, the role of TRUS in screening and early detection of Ca.P. remains controversial, other applications e.g. the assessment of prostatic size and volume, staging of protstate cancer, monitering of the response to therapy and guidance of prostatic biopsy have received wider acceptance. Also, development of an efficiency and non-invasive treatment for many patients with localized cancer of the prostate using HIFU and cryosurgery constitute considerable step forward.

In conclusion, TRUS has revolutionized the urologist's ability to feel and see the prostate. It has simplifed prostate biopsies. It can also helps in staging Ca.P. and in BPH, exact volume calculations enables to select proper treatment. With improvements in instrumentations and 3-D computer enhancement, TRUS role in prostate will evolve further.

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HIRSCHSPRUNG'S DISEASE

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Introduction

Hirschsprung's disease is a congenital disorder of bowel motility that usually presents in neonatal stage with inability to pass meconium within 48 hours of birth. Evacuation may occur after a rectal examination usually with a gush of stool and flatus. When the passage of meconoum is delayed beyond 48 hours in a full term otherwise healthy infant, Hirschsprung's disease should be suspected. Subsequently patient develops distension which may be relieved by using suppositories or enemas. Laxatives usually fail to help the child. The most dreaded complication in the neontal period is ischemic enterocolitis which may lead to septicemia and death. The baby becomes very sick, with refusal of feeds and vomiting. There is tense abdominal distension and baby may pass large amounts of foul smelling gas and putrid loose stools which may be bloody. The lesion is ischemic necrosis of the mucosa of the bowel above the aganglionic segment due to stasis. If such an infant survives he then develops chronic constipation, abdominal distension and failure to thrive.[1]

Embroyology and Etiology:

The embryologic defect in Hirschsprung's disease is the failure of craniocaudal migration of neural crest cells in the distal part of the colon.[2] These neural crest cells fail to migrate because of abnormal distribution of fibronectin and laminin in the extracellular spaces in patients with aganglionic bowel wall.[3] A recent study in support of the hostile environment theory reported loss of normal cellular adhesions by examining neural cell adhesion molecule (NCAM) reactivity in patients with Hirschsprung's disease.[4]

Genetic Deletions:

The first association of a specific genetic defect associated with Hirschsprung's disease was in 1992 by Martucciello et al.[5] This group found a deletion in the long arm of chromosome 10 of a child with total colonic aganglionosis. Recently two groups have demonstrated actual point mutations affecting the RET protooncogene A recessive susceptibility locus on human chromosome 13q22 seems to be an error in the endothelin - B receptor gene (EDNRB) exon 4. Endothelins are a family of potent vasopressor substances. EDNRB expressed on endothelial cells mediates endothelin - induced activation of nitric oxide synthase which counteracts vasoconstriction. Because nitric oxide synthase is absent in aganglionic intestine, it is possible that the defect in the gene that encodes for EDNRB may be one of the causes of deficient nitric oxide synthase in patients with Hirschsprung's disease.[7]

Pathology:

The gross features of Hirschsprung's disease vary with the duration of untreated disease. In the neonatal period the intestine may appear fairly normal. As the child ages, the proximal, ganglionic intestine hypertrophies and becomes thicker and longer than normal because of increased peristalsis to overcome the distal functional obstruction. The transition zone between ganglionic and aganglionic intestine may be funnel like because of presence of few ganglia in it. The absence of the ganglion cells in the distal intestine is the hallmark of the disease. The ganglion cells are absent in both the submucosal (Meissner's Plexus) as well as the intermuscular (auerbach's plexus). A marked increased in nerve fibres which extend into submucosa are seen on acetylcholinesterase stain. Aganglionosis typically extends to the rectosigmoid region in 80% of cases. However, in some cases it may extend to whole colon (total colonic aganglionosis) or may involve in addition small intestines also (total intestinal aganglionosis). In some patients aganglionosis is restricted to few centimetres of rectum adjacent to the anus.[1]

Pathophysiology

The intestine contains intrinsic nervous system with a neurotransmitter that is predominantly inhibitory in nature, this system is referred to as non-cholinergic, non-adrenergic nervous system. The neurotransmitter responsible for this class of nerves is nitric oxide.[6] In

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Hirschsprung's disease there is loss of the enzyme nitric oxide synthase (the enzyme required for nitric oxide production) in the myenteric plexus, with the result that the aganglionic segment fails to relax and acts as a functional obstruction of the colon.[1]

Incidence:

The incidence of Hirschsprung's disease ranges from 1 in 4400 to 1 in 7000 live births.[8] The male to female ratio is 2.5:1 in favour of males.[9]

Differential Diagnosis:

Hirschsprung's disease must be differentiated from other causes of intestinal obstruction with distension and either delayed or absent passage of meconium. These include meconium plug syndrome, lazy left colon syndrome, meconium ileus, megacystis-microcolon syndrome, hypothyroidism, intestinal neuronal dysplasia. In all these disorders ganglion cells will be present.[1]

Diagnosis:

The barium enema is usually confirmative and assesses the length of aganglionic segment (constricted portion). It also identifies area of transitional zone between ganglionic and aganglionic bowel and proximally dilated ganglionic bowel. However, it may not be diagnostic when aganglionosis is low (ultrashort segment) or involves whole colon (total colonic aganglionosis). Sometimes barium retention in the colon for 2 to 3 days may be the only suggestive sign in infants. Anorectal manometry is another method of diagnosing Hirschsprung's disease. It was first used by Toban in 1968.[10] In normal individuals transient rectal distension causes relaxation of the internal anal sphincter. In Hirschsprung's disease contraction rather than relaxation occurs.

Rectal Biopsy:

The conventional histologic demonstration of the absence of ganglion cells in the rectal biopsy specimens taken 2.5cm above the dentate line establishes the diagnosis of this disease. The ganglion cells are absent in both myenteric (Auerbach's plexus) and submucosal (Meissner's plexus). Rectal biopsy as an aid to diagnosis for Hirschsprung's disease was introduced by Swenson and Bill in 1955.[11] They used to take full thickness biposy from the posterior rectal wall.

Modification of the method has been sought. In 1969 Campbell and Noblett[12] reported their experience with rectal suction biopsy in diagnosis of Hirschsprung's disease, using a special apparatus for taking biopsies. The advantage of using this apparatus is that the patient does not need general anaesthesia and is an OPD procedure.

Since the histologic diagnosis whether using paraffin blocks or cryostat sections is one of exclusion i.e., looking for absence of ganglia rather than finding a positive feature there are chances of misdiagnosis, depending upon whether the biopsy might have been taken from normal hypoganglionic zone of lower rectum, or is be too superficial, hence inadequate, ganglia may be immature and very small to visualize especially in cryostat sections. This overall dissatisfaction for routine haematoxylin eosin stain generated a search for positive diagnostic methods.

With the development of histochemical methods of staining acetylcholinesterase by Karnovsky and Roots[13] it becomes possible to positively stain the hyperprophied nerve bundles (Hatchetts Brown) present in the aganglionic segment. This method has been modified by Kobayashi et al[14] in which time for staining has been minimized to just 10 minutes making it possible to utilize it both for diagnosis and to know the extent of aganglionosis intra-operatively during definitive procedure.

Treatment of Hirschsprung's disease:

A. Medical
B. Surgical

Medical Treatment;

The treatment of aganglionic megacolon is operative relief of the intestinal obstruction. Medical treatment is ineffectial and dangerous. The only ineffective non-operative treatment is decompression by enemas which can sometimes result in perforation of the thin walled aganglionic segment.

Surgical treatment:

Definitive surgical treatment of aganglionic megacolon involves bringing normal bowel as low in the rectum as is technically possible by resecting the aganglionic bowel. Preliminary decompression by an appropriately located colostomy in the normally innervated intestine proximal to the aganglionic gut is mandatory. Usually the transverse colon is used as a loop.

The deformative surgical procedure is deferred untill the infant is approximately 1 year of age or untill the older patient is returned to good nutritional status. The definitve procedure is followed in 3-4 weeks by colostomy closure.

Swenson's Procedure:

This is the procedure originally devised for the definitive treatment of Hirschsprung's disease. The operation encompasses freeing the rectum down to the sphincter of the aganglionic segment, closure of both the distal aganglionic rectum and the proximal normal innervated colon eversion of the closed rectal stump through the annus and a precise two layer anastomosis of the pulled through normal colon to the everted rectum.[15]

Duhamel Procedure:

Duhamel devised a retrorectal technical variance of Swenson's procedure. The object of this operation is to exclude and not to resect the malformed rectum and all dissection of pelvis is thus avoided to prevent injury to pelvic nerve plexus. The anastomosis is done end to side with rectum. by preserving the rectum an important area of reflex activity and hence desire to defecate is preserved. The operation was later modified by Martin in 1962, in order to cope up for the problems of developing facalomas in blind rectal stump. After end to side anastomosis of classic Duhamel, a spur-crushing clamp is applied so as to divide the septum between rectum and colon. The clamp cuts through the septum by pressure necrosis within 3 to 5 days resulting in a rectum of twice normal size[16] and with normal ganglion cells in half of its circumference.

Soave Procedure;

It is an extramucosal technique of anastomosis which involves removal of the mucosa of the distal bowel by submucosal dissection to the anus and the passage of the normally innervated colon. Through the remaining rectosegmoid muscular tube a stump is kept protruding 5 to 10cm from the anus. The stump after 15 to 20 days, till adhesions have formed between it and rectum is severed with a cautery, thus forming a sutureless anastomosis. Disadvantage of the operation is that the stump remains hanging for a couple of weeks which causes discomfort to the patient.

Boley's Procedure:

Boley modified Soave's procedure. This is a single stage procedure in which the stump instead of hanging is anastomosed during the primary pull-through procedure.

Martin's Procedure:

This technique is used for infants having total colonic aganglionosis and characterized by an extended side to side anastomosis between ganglionic pulled through small intestine and aganglionic rectum and colon. The length of the anastomosis begins at the level above the dentate line and can extend in a proximal direction as far as the splenic flexure. The advantage is that retained aganglionic colon continues to act as an aid for fluid and water absorption.

Laparoscopic Approach:

Thomas in 1996[20] compared open Swensons pull through with laparoscopic Swensons procedure for Hirschsprung's disease. Post-operatively the laparoscopic group had a shorter hospital stay and had a shorter period until the start of oral intake.

Transanal Approach:

Langer et al in 1999[21] developed a one stage pull through procedure using a transanal approach that eliminates need for intra-abdominal dissection. Ganglion cells were confirmed by frozen section and the bowel was transected and anastomosis completed. He found excellent results in terms of early post-operative feeding, early hospital discharge and no visible scars.

Post-Operative Complications:

A complication common to all of the operations has been post-operative intestinal obstruction from adhesions. Suture line leakage in the endorectal pull through procedure results in a sleeve abscess between the pulled through colon and the muscular cuff of the rectum. Anastomotic stenosis is hazard peculiar to the Swenson's procedure. Fecalomas of colon in Duhamel's procedure. Enterocolitis occurs after any of the above procedures, the basic etiology being defective mucins in patients of Hirschsprung's disease as has been recently shown by Aslam et al in 1997[22] by colonic mucosal organ culture with radioactive mucin precursors (35-S) sulphate and 2(H) glucosamine.

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"EFFICACY & TOLERABILITY OF LOSARTAN COMPARED WITH AMLODIPINE INTHE TREATMENT OF ESSENTIAL HYPERTENSION"

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Abstract: *The antihypertensive efficacy and safety of once daily Losartan potassium (50 mg) was compared with that of once daily Amlodipine (5 mg) in 163 patients of essential hypertension in a multicentre prospective, randomized, parallel - group study. The study consisted of a two week, placebo run-in period followed by eight week treatment period with either of the two drugs. Patients were assessed at weekly intervals for analysis of change in sitting systolic blood pressure (SSBP) and sitting diastolic blood pressure (SDPP), the end point measurement was after 8 weeks of monotherapy. There was statistically no significant difference between the two groups for change in SSBP (p=0.74) and SDBP ()p=0.59). Similar mean changes from base line were observed in both groups. For both variables the difference between the two treatment groups was small and fell well within relatively narrow CI values, therefore, showing that Losartan is as effective as Amlodipine. Losartan has excellent tolerability as compared to Amlodipine.*

Key words: *Losartan, Amlodipine, comparative efficacy, hypertension, monotherapy.*

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Introduction

Several classes of antihypertensive agents with proven efficacy are currently recommended for first-line monotherapy in the treatment of mild to moderate hypertension[1,2]. Calcium antagonists are currently widely used in the treatment of hypertension. Amlodipine has well established efficacy and is widely used in the treatment of essential hypertension[3-5]. Angiotensin II receptor antagonists are part of the newest class of antihypertensive angents and there are many reports that they are efficacious and well tolerated[6]. Losartan, the first angiotensin II receptor antagonist, quickly binds to AT_1 receptor sites and decreases blood pressure gradually and effectively controls blood pressure[7-8]. This study was undertaken to compare the efficacy and safety of Losartan (50 mg) with widely used Amlodipine (5 mg) in the treatment of mild to moderate essential hypertension.

Material and methods

The antihypertensive efficacy and safety of once daily Losartan Potassium (50 mg) was compared with that of once daily Amlodipine (5 mg), in a multicenter prospective randomized, parallel-group study in patients with mild to moderate essential hypertension. The study consisted of a two week, placebo run-in period followed by eight week treatment period with either of the two drugs with weekly measurement of the blood pressure. A total of 163 patients received the study medication at two regional Government Medical College Hospitals (Jammu & Srinagar), taken up from medical out-patient department. History, physical examination and basic hematologic, biochemical and urinary parameters were carried out at baseline and at eight week visit.

Mild to moderate hypertension was defined as sitting diastolic blood pressure (SDBP) of >95 mm Hg and <115 mm Hg after a two week single placebo run-in-period. The most important exclusion criteria were presence of overt heart failure of Myocardial infarction in the preceding three months. Patients were assessed at weekly intervals. Weight, pulse rate, SSBP and SDBP were recorded at each visit. They were measured by same clinician in the sitting position according to WHO guidelines (Two measurements in the sitting position after 5 minutes of rest, followed by one measurement in the standing position after at least 2 minutes of equilibration). At each visit the occurence of any adverse events and any spontaneously reported adverse experiences were recorded. Electro-cardiograms were taken prior to the study and at end of treatment, patients with a SDBP of >90 mm Hg were deemed as non responders. Treatment groups were well matched with respect to baseline demographic and disease characteristics.

The use of any concomitant treatment that could interfere with evaluation of efficacy, safety or tolerability

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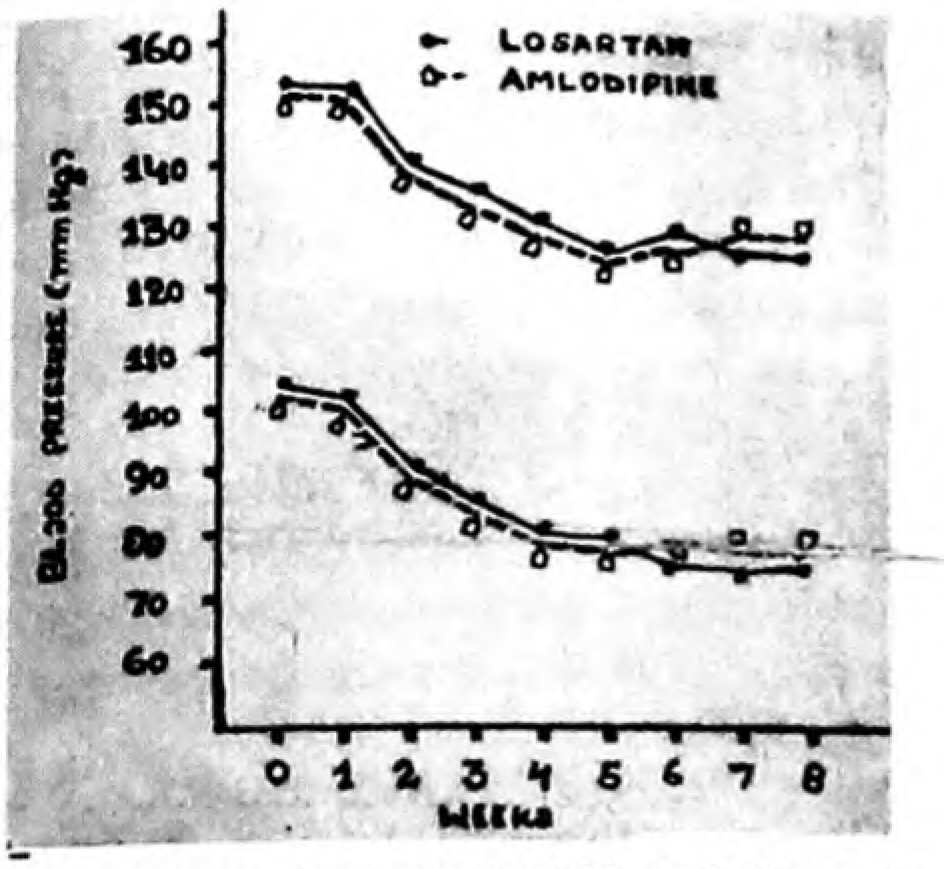

Fig I: Line Graph Shows Systolic (TOP) and Diastolic (Bollom) blood pressure of patients treated with Amlodifine or losartan for 8 weeks. There were no statistically significant differences between the blood pressure of the two groups at the end of 8 weeks

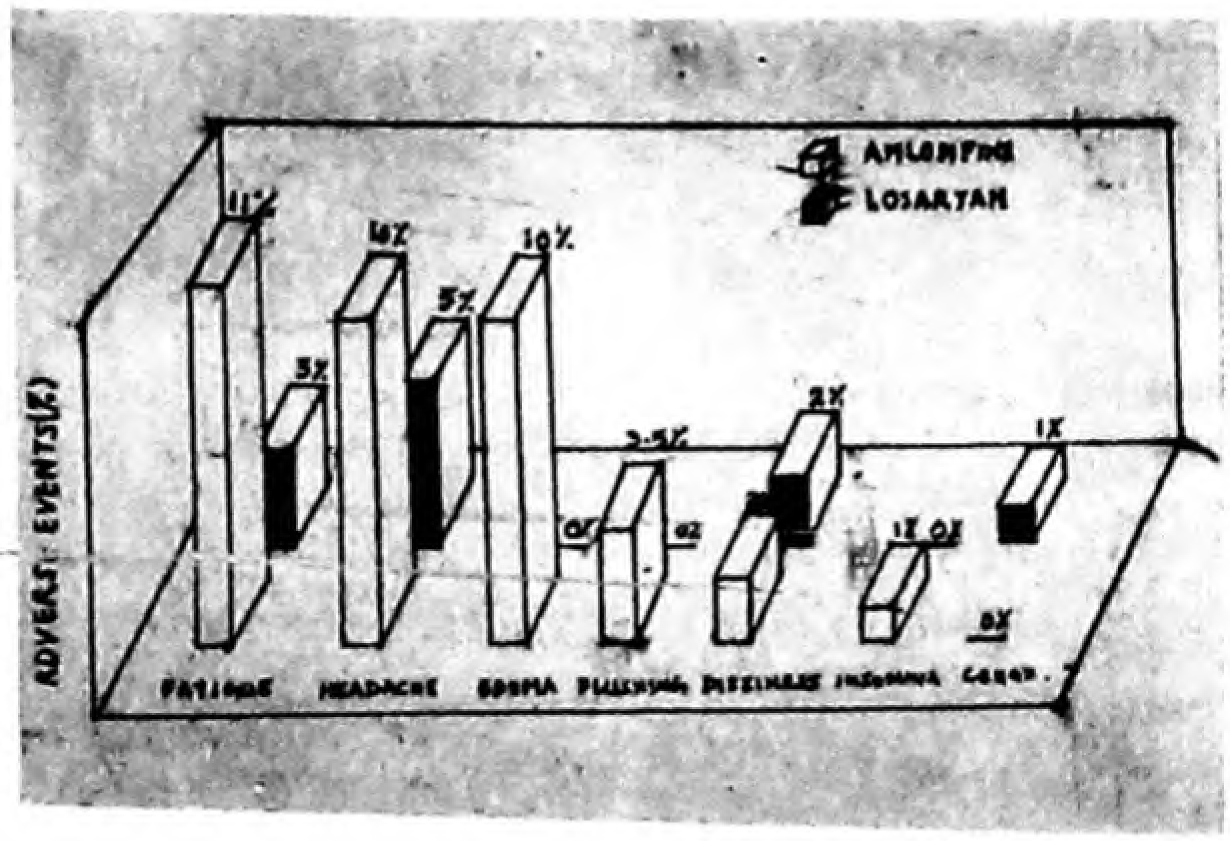

Fig. 2: Bar Graph showing percentage of adverse events of Amlodifine and Losartan therapy

was prohibited during this study. The primary efficacy variable was the change from baseline in mean SDBP at the end point of mono-therapy (8 weeks). Secondary variables analysed included change from baseline at the endpoint of monotherapy in means SSBP and responder rates (defined as the percentage of patients at the points with SDBP ,90 mm Hg).

Two date sets were used for efficacy parameters. The primary analysis was based on "intent —to-treat" date set which included all randomized patients who had a baseline measurement and at least one post randomization measurement for the variable to be analysed. A secondary analysis was performed for the "acceptable patient" date set. Excluded in this set were patients with irregularity in therapy, delay in weekly visits, and use of other forbidden drugs. For both analysis the end point measurement was after 8 weeks of monotherapy. All statistical test were carried out at the two sided 5% level. Responder rates were analysed by means of a X^2 test.

Results

A total of 163 patients were randomized. Of the randomized patients, 3 patients quit the study with 160 completing the 8 week monotherapy period. In the Losartan group one patient discontinued prematurely because of adverse experience and other two were excluded because they did not meet the protocol criteria. The demographics of the subjects studied are given in Table 1.

Both drugs were effective at lowerling SDBP and SSBP (Figure 1). Similar mean changes from baseline were observed in both groups after 8 weeks of monotherapy (SDBP:- 11.3 mm Hg for Losartan and -10.6 mm Hg for Amlodpine, SSBP -14.1 for Losartan and -15 mm Hg for Amlodipine). For the primary analysis SDBP reduction after 8 weeks of monotherapy, non-statistically significant estimated mean difference of 0.6 mm Hg (95% CI, -2.8, 1.4 in favour of losartan was observed, p=0.59). There was also no statistically significant difference between the two groups for change in SSBP after 8 weeks of monotherapy (p=0.74). For both variables the differences between the treatment groups was small and fell well within relatively marrow CI values, therefore, showing that Losartan is as effecitve as Amlodipine. Results from the secondary analysis with acceptable patient data set were comparable to those observed for the intent-to-treat data set. Similar decreases in SDBP and SSBP were obtained in both men and women for two treatment groups. The side effect profile of losartan and Amlodipine is given in the bar graph (Fig. 2.).

Discussion

This comparative eight week study confirms that Losartan (50 mg) once daily and Amlodipine (5 mg) once daily are effective anti-hypertensive agents for treatment of mild to moderate hypertension. This study shows no significant differences in efficacy between the two monotherapeutic agents.

In the United States, Amlodipine is often considered "the gold standard" for treatment of hypertension[6]. It is a well recognized anti-hypertensive agent that belongs to the dihydropyridine group within the calcium antagonist class. The efficacy of 5 mg Amlodipine is well documented, in the treatment of essential hypertension[3-5]. Clinical effficacy of Losartan, the first angiotensin II receptor anatgonist has been well documented in the treatment of mild to moderate hypertension in various studies[7-9]. As a monotheraputeic agent in hypertension Losartion has been reported very effective in comparative studies[1,9-13].

Table-I: Demographics of subjects studied.

Parameter	Amlodipine	Losartan
Number of patients	80	80
Male/Female	41/39	45/35
Age (Years)	52.1±2.4	51.8±2.9
Duration of Hypertension (yrs)	5.9±2.1	5.7±2.2
Pretreatment blood pressure Systolic (mm Hg)	162±10.8	164±11.2
Pretreatment blood pressure Diastolic (mm Hg)	114.1±4.5	113.6±4.3
Serum creatinine (u mol/l)	94.8±5.9	95.2±3.5
Total serum cholosterol (m mol/l)	5.75±0.38	5.68±0.24

Values are expressed a smeans + SEM

The data show reductions in SDBP and SSBP of similar magnitude produced by Losartan and Amlodipine. Comparison of the two antihypertensive agents shows that the range of clinical equivalence can be considered to be 3 mm Hg. For the primary efficacy variable (change in SDBP from baseline), the CI for the difference between Losartan and Amlodipine was -2.8 to 1.4 mm Hg (negative number in favour of Losartan).

In the present study, the side effect profile of Losartan is superior to Amlodipine. A higher incidence of fatigue, dizziness, headache, flushing and oedema was noted in Amlodipine group[8-10]. As reported in earlier studies, the angiotensin II receptor anatgonists have an excellent side effect profile that is equal to or better than placebo[14]. Only one case of cough occured with Losartan treatment, confirming previous reports that angiotensin II receptor anatgonists, as a result of their mechanism of action at the last step in renin-angiotensin-aldosterone pathway do not have unwanted effects as associated with ACE inhibitors which interfere with the pathway at a more proximal point.[15,16]

We conclude that Losartan is as effective as a well established calcium anagonist, Amlodipine. The data also suggest that Losartan is not associated with the side effects characteristic of the comparator class used in this study, Amlodipine. These and similar data indicate that this excellent tolerability is a class effect of angiotensin II receptor anatgonists.

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THERAPEUTIC SPLENECTOMY IN HEMATOLOGICAL DISORDERS

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Abstract: Splenectomy as a therapeutic measure is desirable in many hematological disorders. This paper reviews and evaluates the response of splenectomy in hematological disorders encountered at Sher-i-Kashmir Institute of Medical Sciences, (SKIMS), Srinagar. Assessment of morbidity and mortality associated with the procedure is also made.

Key words: Spkenectomy, hematological, therapeutic

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Introduction

Pliny in the first century recorded that the Ancients would remove the spleen from athletes to improve their "wind" but this seems most unlikely. Galen and other anatomist physiologists Nicholas Mathias is credited with first total splenectomy for trauma in 1678[1]. It was in the mid 19th century that therapeutic splenectomy was performed for splenic enlargement[2]. In recent times therapeutic splenectomy has earned a place for the treatment of hematological disorders like hereditary spherocytosis, ITP, hypersplenism, Felty's syndrome, hairy cell leukemia, chronic lymphatic leukemia, chronic myeloid leukemia, aplastic anaemia and myelofibrosis[3].

This study reviews the indications for and evaluates the response to splenectomy for various hematological disorders encountered at SKIMS. In addition we have also assessed the morbidity and mortality associated with therapeutic splenectomy.

Material and Methods

Our study included patients with various hematological disorders subjected to splenectomy from July, 1985 to July, 1995 at Institute of Medical Sciences, Srinagar (J&K) India in the department of Surgery.

Medical records of all the retrospective cases were reviewed. Preoperative management included a detailed hematological and coagulation studies where relevant. Blood was cross matched for the operation and platelet transfusions were prepared and given in preoperative period in patients with symptomatic thrombocytopenia. Preoperative blood transfusions and fresh frozen plasma was given in patients wherever indicated.

Corticosteroids (Prednisolone) were given in patients whenever and wherever indicated. All splenectomies were performed under general anaesthesia. A full laparotomy was carried out in all the cases. After splenectomy, a careful search for splenuculi was carried out.

Response criteria:

The criteria described by Musser et al were modified for simplicity of calculation and were found at par with the Musser et al criteria[2].

The criterias laid down for describing the response in a splenectomised patient were:

a. Response in a thrombocytopenia patient:
  I. Complete response (CR) - 100,000 U/L or above
  II. Partial response (PR) - 50,000 - 100,000 U/L
  III. No response (NR) - <50,000 U/L

b. Response in a neutropenic patient;
  I. Complete response - 4,000/cm^3 or above
  II. Partial response - 2,000 - 4,000/cm^3
  III. No response - <2,000/cm^3

c. Response in an anemic patient:
  I. Complete response - Hb 10% or above
  II. Partial response - Hb 8-10%
  III. No response - Hb <8g%

Patients were kept in post operative ward for first 24 hours and were put on I/V fluids for 24-48 hours. Steroids

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were continued if the patient had been receiving steroids preoperatively. In all such patients hydrocortisone was used and tapesed over 48-72 hours in the post operative period. Antibiotics (Ampicillin & Gentamycin) were routinely given in post-operative period. A preset routine was followed for taking blood samples on day "0", day "3" and day "7" for assessment of hematological parameters (which mainly included Hb%, total leukocyte count (TLC) and platelet count). The same parameters were taken into consideration on follow up at Ist month, 3rd month & 6th month. The mean of post-operative and follow up hematological parameters was taken to assess the response (as described earlier).

Follow up was complete in 92% cases. The duration of follow up ranged from 1 week to 5 years with a mean of 6 months. The clinical diagnosis of all patients was confirmed after surgery by histopathological examination of the spleen.

Results

Table-I: Indications for splenectomy

Diagnosis	No. of Cases	%age	Mean age (years)	Sex ratio M:F	Splenic wt. in "g" Mean
Idiopathic thrombocytopenic purpura (ITP)	41	40.19	29.58	1.05:1	147.07
Hereditary spherocytosis	15	14.70	18.60	1:1.14	470
Idiopathic hypersplenism	15	14.70	42.73	1:1.14	837.33
Hemolytic anemia (acquired)	09	8.82	42.88	1:3.5	831.11
Portal hypertension with splenomegaly	09	8.82	38.77	1.25:1	855.55
Lymphoma	08	7.84	36.12	1:1	511.25
Hairy cell leukemia	01	0.98	45	1:0	4200
Malignant histiocytosis	01	0.98	10	0:1	2060
Gaucher's disease	01	0.98	4	1:0	850
Tropical splenomegaly	01	0.98	48	0:1	6050
Splenic hemiangioma	01	0.98	47	1:1	225

The indications of splenectomy in our series are summarized in Table-I. Maximum number of patients (77.45%) belonged to adolescent and middle age group (17-60 years) followed by paediatric age group (16 years or less) 17.64% and older age group (>60 years) 4.90%. The youngest patient was 4 years and oldest patient was 72 years of age. male to female ratio was 1.0:1.08 i.e. 49 males and 53 females. The commonest indication for splenectomy was ITP (40.19%). The disease of the youngest age group was hereditary spherocytosis (Table-I). The female sex mainly dominated in acquired hemolytic anemia (Table-I).

The spleen weighed between 150g to 6050g. The incidence of accessory spleen was highest in hereditary spherocytosis (33.33%) followed by other diseases. overall incidence of accessory spleen was 19.60%. Paediatric age group mainly dominated with incidence of accessory spleen i.e. 38.88%.

Table-II: Showing post-operative complications in 102 patients with various hematologieal disease.

Diagnosis	Pt. with Post-operative complications No.	%	TYPE OF COMPLICATIONS Bleeding Intra-Op.	Post Op.	Wound Hematoma	Pneumonia	Wound. Inf.	Sepsis	Others*
Idiopathic thrombo cytopenic purpura	6	14.63	2	1	x	1	2	x	x
Hereditary spherocytosis	2	13.33	x	x	x	x	x	1	1
Accquired hemolytic anemia	2	22.22	x	x	x	x	x	x	2
Idiopathic hypersplenism	4	26.66	x	x	x	2	1	x	1
Portal hypertension with splenomegaly	2	22.22	x	x	1		x	1	x
Lymphoma	3	37.5		x	x	x	x	x	3

Pt. = Patient, Op= Operative, Inf. = Infection.

** Others category includes complications like gastrointestinal hemorrhage, Intra-abdominal abscess, pancreatitis, thrombosis, wound dehiscence, liver failure and renal failure. Total Morbidity - 18.62%*

There were 19 episodes of post-operative complications as shown in Table-II. The complications were mainly seen in patients of older age group or in patients with serious diseases like lymphoma. In our series, we did not subject the patients to diagnostic laparotomy for lymphoma; rather patients with malignant lymphoma of spleen were subjected to splenectomy for hematological depression even in advanced stage of disease for a better quality of life. Total morbidity in our series is 18.62%.

We lost "7" patients within 1 month after surgery. The overall mortality was 6.86% (Table-III).

The response to splenectomy was individualized for various diseases and for hematological parameters like thrombocytopenia, anemia and leukopenia. Patients with ITP responded to splenectomy i.e. 77.5% showed complete response; 12.5% partial response and 10% no response for thrombocytopenia while as the patients who in addition to thrombocytopenia had anemia showed complete response in 80% and no response in 20%.

Patients with hereditary spherocytosis, showed complete response in 85.71%; partial response and no response in 7.14%.

For idiopathic hypersplenism, leukocyte response was complete response in 77.77%, partial response 11.11%, no response 11.11%; Hb response:- complete response in 83.33%, no respounse 16.66%; Platelet response:- complete response in 71.42%, partial response 14.28% and no response 14.28%.

In acquired hemolytic anemia, complete response was seen in 75% of patients, partial response in 12.5% and no response in 12.5% of patients.

In patients of portal hypertension with splenomegaly, leukocyte response-complete response in 66.66% partial response in 33.33%; Hb response - complete response in

Tabel III: Shows the cause of death due to splenectomy

Age in years	Sex	Diagnosis	Cause of death	Percentage of death
12 years	M	Hemolytic anemia	Septicemia	11.11%
22 years	F	Portal hypertension	gastrointestinal hemorrhage	11.11%
64 years	F	Idiopathic thrombo-cytopenic purpura	Intracranial hemorrhage	02.43%
63 years	F	Hypersplenism	Congestive cardiac failure	20.00%
72 years	F	Hypersplenism	Pneumonia and liver failure	
58 years	F	Hypersplenism with CRF with polycystic kidney disease	CRF with post-operative pancreatitis	
27 years	F	Hereditary spherocytosis	Septicemia	06.66%

CRF = Chronic renal failure; Total Mortality = 6.86%

50%, partial response in 25% and no response in 25%; Platelet response - complete response in 33.33%, partial response in 33.33% and no response in 33.33%.

In patients with malignant lymphoma; leukocyte response - complete response in 50%, partial response in 25% and no response in 25%; Hb response - complete response in 75% and no response in 25%.

In patient in hairy cell leukemia, the pre-operative platelet count was 32,000/ul, Hb 8.5 g/dl and leukocyte count was 2,500/cm^3. Postoperative mean platelet count was 4,500/cm^3 (complete respone) and Hb was 9.8g/dl (partial response) while as leukocyte count did no improve overall response was excellent.

In patient of malignant histiocytosis, the leukopenia improved and showed complete response (>6,000/cm^3). The response was excellent following splenectomy.

In Gaucher's disease, we observed partial response in leukocyte count and complete response in Hb.

In tropical splenomegaly syndrome, the result was not encouraging.

In splenic hemiangioma, the results were excellent.

Discussion:

Idiopathic thrombocytopenic purpura (ITP): The main indication for splenectomy in the present study was ITP consistent with Musser et al[2]. The overall response to splenectomy in ITP was CR-77.5% and PR in 12.5% as reported by others[3-6]. Out of 41 patients, 3 patients had concomitant diagnosis of cholelithiasis, who were treated for both the ailments in same sitting. No complications except for diffuse bleeding in 6 patients was encountered on table. No intra-operative death occurred. The morbidity and mortality was low in this group as reported by others[2,5,6]. (Table-III, IV).

Hereditary spherocytosis: Constituted 14.70% of our study group. Although, splenectomy does not confer a lasting cure but the excessive hemolysis is prevented. We observed an excellent response rate; CR in 85.71% and PR in 7.14% as reported by others[2,3]. We observed a morbidity of 13.33% and mortality of 6.66% reported by others[7,8].

Hypersplenism: is either a primary or idiopathic hematological disorder or it is a syndrome induced by splenomegaly produced by a variety of diseases. In our study, we have grouped patients with idiopathic hypersplenism in one group and patients with secondary hypersplenism have been discussed separately under different headings.

15 patients were subjected to splenectomy 53.55% patients received steroids in the pre-operative period without any significant benefit[9]. Only 2 patients developed diffuse bleeding on table which was controlled. The overall morbidity was 26.66% which is quite near to Albrechtsen and Ly (1980) study but little reports a very high mobidity of 66.66% in patients with hypersplenism. Mortality observed was 20% which is quite high as compared to others[9,10]. Probably the reason was elderly age group and concomitant diseases.

Acquired hemolytic anemia: The blanket term embraces all hemolytic disorders that ae not due to inborn defects in the red blood corpuscles. It may be autoimmune or secondary. (Macpherson 1981) 9 patients were subjected to splenectomy. The response was excellent (75-90%) consistent with Laws et al[3] study but quite higher than Ly and Albrechtsen study[9]. Morbidity was 22.22% and mortality was 11.11%[9,11].

Portal hypertension with splenomegaly: Constituted one of the commonest cause of secondary hypersplenism. All patients were subjected to elective splenectomy, 6 patients (66.66%) had splenectomy in association with Porta systemic shunt[3]. The morbidity was 22.22%, a little lower than observed by others[4,11] but mortality of 11.11% in our study is higher than others[3,11].

Malignant lymphoma: Lymphoma are malignant neoplasms characterized by the proliferation of cells native to the lymphoid tissue i.e. lymphocytes, histiocytes and their precursors and derivatives. Like all other neoplasms, all lymphomas are of monoclonal origin, as can be documented by isoenzyme and cell markers.

In our study, 8 patients with malignant lymphoma were subjected to splenectomy for various combintions of anemia, thrombocytopenia and leukopenia in order to define the effects of this procedure on the hematological status as was done by Adler et al in 1974 on 50 cases of lymphoma and chronic lymphocytic leukemia[12].

Selection of splenectomy in this group was often based on failure to respond to other types of treatment, and thus our results can not be used for comparison of splenectomy Vs corticosteroid therapy or splenic irradiation as primary treatment for hematological depresion. However, these data demonstrate that the splenectomy may be useful in patients with cytopenias refractory to other types of therapy The patients were further managed by various chemotherapeutic agents in the follow up period by the department of Radiation Oncology.

The response was 50-75%, consistent with 71% of Adler et al[12]. (Fig-6).

In this group we observed the highest morbidity 37.5% as reported by others[10,11].

Miscellaneous group included patients with hairycell leukemia[1], malignant histiocytosis[1], Gaucher's disease[1], tropical splenomegaly[1] and splenic hemiangioma[1]. However, the number of patients for each entity was very less, thus, it is beyond the scope of discussion to frame an opinion on the basis of these results.

Thus we conclude that splenectomy offers a desirable palliative effect in carefully selected patients with various hematological disorders especially in hereditary spherocytosis, ITP, acquired hemolytic anemia and idiopathic hypersplenism. However, for getting the excellent results, a proper coordination and cooperation between the hematological team and surgical team is mandatory.

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TREATMENT OF ALOPECIA AERATA WITH THREE DIFFERENT MODALITIES (A COMPARATIVE STUDY)

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Abstract: 123 patients of Alopecia Aerata were put on three different therapeutic modalities e.g. intralesional steroids, oral steroids and photochemotherapy. The effect of each was studied for a period of seven weeks. All the three groups showed regrowth of hair. In the one on photochemotherapy, the response was better as compared to the groups of intralesional and oral steroids.

Key words: - Alopecia Aerata (AA) - Steroids - Psoralens

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Material an Methods:

123 patients of either sex (Male 88, female 35) of different age groups were included in the study with clinically defined AA. All the patients were off from any other medication prior to the study.

The patients included in this study were divided into three different groups as group I, group II, group III (Table I). The group I included patients with solitary lesions, and were given intralesional sterioids (Hydrocortisone, Sod Acetate - Wycort - Wyeth) at weekly intervals. The group II included patients with multiple lesions and were put on systemic steroids at a dose of 40mg per day. The group III were divided into two sub-groups A&B A included solitary lesions B included multiple patches. Both sub-groups were given topical psoralens lotion, patients were directed to apply the lotion at 8 am, expose to sunlight followed by washing. All the patients were observed at weekly intervals for regrowth of hair, or any other effect.

Table I:

Group	No	Lesion type	Treatment modalities
I	48	Solitary lesion	Intralesional hydrocortisone weekly
II	38	Multiple lesion	Systemic steroids 40mg OD
III	26(A)	Solitary patch	Topical psoralens
	11 (B)	Multiple patch	

Results:

At the end of seven weeks follow up following observations were made. In group I, of 48 patients 27 showed complete recovery while 10 patients did not report for follow up. In 11 patients no improvement was noticed at the end of the seven weeks study. No patient developed any side effects and no patient showed any regrowth of white hair. In group II which included 38 patients, 22 patients showed regrowth of hair, and 14 patients did not report back for observations and results, 2 patients did not show any improvement.

In group III (sub-group A) which included 26 patients, 18 patients showed complete recovery at the end of study, 2 patients did not report for follow up. 2 patients did not show any response and in 4 treatment was stopped because of local irritant reaction.

In sub-group B which included 10 patients, 7 patients showed complete recovery, 1 did not report for follow up and in 2 no improvement was noticed and in 1 treatment was stopped because of local irritation.

Table II:

Group	Total	Regrowth	Pt. who did not report	No improvement	%age
I	48	27	10	11	56.2
II	38	22	14	2	57.2
III (A)	26	18	2	2+4*	69.8
III (B)	11	7	1	2+1*	63.7

* *Local irritant reaction*

Discussion:

Alopecia Aereta (AA) accounts for about 1-2% of new dermatological outpatient attendances in Kashmir. It is not at present possible to attribute all or indeed any case

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of AA to a single cause. Among the many factors which appear to be implicated in atleast a propotion of cases are patients genetic constitution, the atopic state, non-specific immune and organ specific autoimmune reactions and possible emotional stress[1]. The process can be reversed to a variable extent by several different therapeutic measures, coritcosteroids, local irritants, photochemotherapy, induction of the contact dermatitis, or by the drugs such as cyclosporin[2]. Our study includes the use of three different modalities as intralesional steroid, systemic steroids and topical psoralen lotion. The comparative effect of treatment schedule was noted.

The present study which involved the application of three different therapeutic modalities in the treatment of alopecia aerata has shown that all the modalities are effective in AA. The patients who were put on topical psoralen therapy showed, an excellent response at a percentage of 69.8% in sub-group A, and at a percentage of 63% in B subgroup which supereeded the percentage of response in other two modalities, i.e. 56.2% in group I and 57.2% in group II.

That psoralens are capable of inducing hair growth is not a recent observation. EL Mofty in his book "vitiligo and psoralens 1968" has mentioned the usefulness of topical psoralens for the treatment of AA. Instances of oral psoralen induced hypertrichosis have also been reported[3].

Hypertrichosis due to topical psoralens for treatment of vitiligo has also been reported[4]. Rochier and Warchewski[5] reported induction of hair regrowth in AA with 8-MOP and sunlight. Further reports using 8-MOP plus UVA (PUVA) have claimed success in upto 60% of patients[6], which corresponds with our study, showing success rate of 69.23% on topical psoralen (PUVA) therapy and 63% in sub-group A&B reports.

How psoralens lead to hypertrichosis or regrowth is not known whether it acts as a local irritant or PUVA non-specifically suppresses the immune responses against the hypothetical hair associated antigen.

Thus, we find that psoralens are as effective as steroids, infact better, has led us to believe that steroids could be avoided in treatment of AA. This is especially of benefit to patients of Kashmir valley, where acid peptic disease is very common.

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MICROBIAL FLORA OF NORMAL EYELID MARGIN DURING EXTRACAPSULAR CATARACT SURGERY

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Abstract:In order to identify pathogenic microbes which may cause post cataract infection, cultures were taken from 100 randomly selected otherwise healthy cataract patients for isolation of bacterial and fungal flora from eyelid margin after preparation of the eye for surgery. Positive bacterial cultures were found in 74% of the patients and fungal cultures were positive in 7% of patients. Aerobes were the most common organisms present in 73 of total 74 cultures studied. Anaerobic bacteria were grown in 9 cultures (1 pure and 8 mixed with aerobes). Staphylococcus epidermidis was the commonest organism isolated (75.67%) followed by Diphtheroids (16.21%). Antibiotic sensitivity revealed ciprofloxacin to the most effective drug against (97.61%) bacterial flora. Gram stained smears correlated very well with the bacteria isolatd in cultures.

Key words: Eyelid Margin, Cultures, Antibiotic Sensitivity

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Introduction:

With advanced surgical techniques in recent years, many of the complications, that used to be associated with cataract surgery have become rare, infection however, continues to be a major complication. It is likely that in the majority of cases. the entry of bacteria occurs at the time of surgery.[1] Introduction of organisms from the patients own eyelids is presumed to be one of the factors for for causation of postoperative infection.

A wide range of bacteria are found in normal eyelid margins, which vary in their number, nature and pathogenicity. The variations may be due to climate, habits, degree of social hygiene, prevalence of epidemic and endogenous disease and use of antibiotics and steroids. Incidence of positive bacterial cultures from healthy eyelid margin vary from 70-98%. This normally present flora can be divided in two groups.

Transient flora are either pathogenic or potentially pathogenic organisms. The various resident organisms which are commonly seen in healthy eyelids are staphylococcus epidermidis, corynebacterium species, (Diphtheroid sp.). Staphylococcus aureus and streptococcal species. Among the transient or occasional strains seen are - Sarcinia, B. Substilis, A. aerogens, Proteus vulgaris, propiono bacterium acnes and Neisseria.[2]

These days the emphasis is to make cataract surgery a safe procedure for all patients. With this aim, an attempt was made in the present study to identify pathogenic microbes in eyelids of cataract patients during surgery, so that effective measures are planned for proper asepsis to prevent post operative infection.

Material and Methods:

This study comprised of eyelid margin swabs of 100 healthy cataract patients admitted for extracapsular cataract extraction with or without intraocular lens implantation. Cases were taken at random irrespective of age and sex. Their eyelashes were trimmed and the framycetin eye drops were instilled four times a day, one day before surgery. The eyes were dilated with 1.0% of cyclopentolate. All medications used before surgery were sterile. In the operating room peribulbar block was gien. The eyelids, nose, cheek, eyebrow and forehead were cleaned with 5% povidone iodine solution in concentric rings outward from the eye with a cotton tipped applicator. The head was drapped with sterile cloth towels in the manner described by Wards woth (1981). The lids of the eye to be operated were everted and three lid margin swabs were taken for cultures. One swab each for gram staining, bacterial (aerobic and anaerobic) and fungal culture. These specially prepared lid margin cotton swabs were dipped in sterile nonnal saline before collecting the sample.

For aerobic cultures sheep blood agar, chocolate agar and Mac-conkey agar were used as culture medias while as for anaerobic growth-Robertson cooked meat medium, and blood agar were used and for fungal isolation sabouraud's glucose agar medium was used. On the basis of colony characteristics, hemolytic properties and biochemical reactions, various gram positive and gram

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negative bacteria were identified. Cultures were grown at least for a period of 6 weeks and weekly check up was done for the appearance of any growth. The isolated slants shoing no growth were discarded after 6 weeks; whenever found necessary, sub-cultures were done.

Susceptibility to various antibiotics was tested using controlled strain of staphylococcus NCTC-6571 and E.coli NCTC-10418 by stokes disc agar diffusion method which was inoculated at 37 degree centigrade for 18-24 hours.

Results:

These cases of cataract (53 females and 47 males) ranged in age from 26 years to 82 years. Bacterial flora from healthy eyelid margin was found to contain organism in 74% of cases. No growth was obtained in 26 patients (26%).

Table-I

Micro-organisms		No. of positive cultures	Total aerobes	Total anaerobes
Aerobes		65	73	
Mixed				
Cultures:	Aerobes	8		
:	Anaerobes	8		
Anaerobes		1	9	

Aerobes were the most common organism present in 73 of total 74 cultures studied (Table-I). Of 73 aerobic cultures, single organism cultures comprised of 56, followed by 2 organism cultures in 15 and 3 organisms in 2 cultures. Anaerobes were present in 9 of 74 cultures with single organism in one culture and two organisms in eight cultures (Table II).

Table-II: Total number of positie cultures

Number of organisms	Number of cultures
Aerobes	
Single organism	56
Two organism	156
Three organisms	2
Anaerobes	
Single organism	1
Two organisms	8

As is evident form Table III, gram positive cocci together constituted majority of the organisms isolated from healthy eyelid margin. Staphylococcus epidermidis was the most common organism present in 56 (75.67%) of total cultures studied. Gram negative organisms were isolated in significant number (8.10 percent). Propioni bacterium acnes was the only anaerobe isolated in 12.16 percent of cases. Ciprofloxacin was the most effective drug against (97.61%) bacterial flora followed by Kanamycin (95.23 percent). Two strains of staphylococcus epidermidis resistant to ciprofloxacin were incidently resistant to all other drugs studied (Bar-chart) figure II).

Table-III

Micro organisms	Number of samples growing organism	Percentage
Aerlbes		
Gram positive cocci		
Staph. epidermids	56	75.67
Staph. aureus	6	8.10
Strept. viridans	3	4.05
Gram positive bacilli		
Diphtheroids	12	16.21
Bacillus subtilis	1	1.35
Gram negative bacilli		
Proteus vulgaris	3	4.05
Enterobacter aerogens	2	2.70
E.coli	1	1.35
Anaerobes		
Gram positive bacilli		
Propionobacterium acnes	9	12.16

Fungal flora in healthy eyelids was cultured from 7 out of 100 patients studied. The fungus was found to be associated with the presence of bacteria in all except one case. The fungi isolated in this study were as written in Table IV. Gram stained smears were available from 100 healthy eyelids. The presence of gram positive cocci and bacilli and gram negative bacilli correlated very well with the isolation of organisms in cultures.

Table-IV

Name of species	Number of cases	Percentage
Candida	5	5
Aspergillus	2	2

Discussion:

In this study of 100 cataract patients, bacterial flora from healthy eyelid margins was found culture positive in 74 percent of cases. This is in agreement with the study of Walter etal[3] who found this incidence as 78 percent. On the otherhand, Lewiss et al[4] and Franklin et al[5,6] have reported a higher incidence of bacterial flora from normal eyelid margin as 96% and 98% respectively.

This series of 100 patients included 47 males and 53 females with the age ranging from 26 years to 82 years. There was no significant difference in the flora recovered from healthy eyelid margin of males and females and between right and left eyes and in different age groups.

Out of these 74 positive cultures, aerobes were present in 73 percent of cultures (65 percent as only isolates and 8% mixed with anaerobes). Cason and Winkler[3], Doughtery[2], Seal[7]. Lewiss[5] and Walter[4] reported aerobes in 79 percent, 51 percent, 48 percent and 98 percent of their positive cultures.

Single isolates were seen in 56 cases, 2 organisms were present in 15 cases and another 2 cases had 3 organisms each. More than one organism was obsered in 17 cases (22.97 percent). Walter et al[4] reported more than one organism in 19 percent of his cases.

The commonest organisms isolated in this study were staphylococcus epidermidis (75.67 percent) followed by diphtheroids (16.21 percent) and staphylococcus aureus (5.10 percent). In the study done by Walter et al (1992) stephylococcus was also the commonest organism isolated in 88 percent cases followed by diphtheroids in 14 percent of cases. Our results are also consistent with the previous studies of Kharzo[8], Seal[7], Doughtery[2] and Lewiss[5]. Significant number of gram negative organisms were isolated (8.10%). These consisted of proteus vulgaris, E. Coli and Enterobacter aerogens. This compares well with the reports of Kharazo[8], Cason and Winkler[3] and Seal[7] who recovered these in 11 percent, 5.5 percent, and 8 percent cases respectively.

In these 74 positive cultures, anaerobes were present in 9 cultures (1 pure isolate and 8 mixed with aerobes). Propioni bacterium was the only anaerobe isolated in this study (12.16 percent). Cason and Winkler[3], Seal[7] and Walter[4] failed to isolate any anaerobe despite specifically looking for it and other anaerobes and continuing cultures for 5 days. Where as Lewiss[5] and Daughtery[2] have also recovered propioni bacterium acnes as the only anaerobe in their respective studies (73.7 percent and 87.2 percent).

In the study made by Dickey[9] and Walter[4] bacteria cultured from anterior chamber aspirate at the end of surgery resembled to those recovered from healthy eyelid margin, but there was lower incidence of positive cultures in anterior chamber to the healthy eyelid margin. Speaker[10] by using molecular epidemiology, demonstrated that an organism isolated from the vitreous was genetically indistinguishable from an isolate recovered from the patient's own eyelids. Bode[11] and Puliofito[14] reported in their respective studies that in endophthalmitis cases staphylococcus epidermidis is the most common organism isolated followed by staphylococcus aureus This study also reveals that these two organisms are those most likely to be found in eyelid margin during extracapsular cataract extraction[12,13]. Intraoperatively, these micro organisms may gain access to the anterior chamber through adherence to intraocular lens and instruments as well as through entry of fluid from the operative field[15].

In this study, fungi from normal eyelids were found to be present in 7 percent of 100 patients, which is in agreement with the similar observation made by Kharazo[8] who have reported the incidence as 100 percent and 7.5 percent in their respective series. Cason and Winkler[3] have reported a lower incidence of fungal flora (0.10 percent) and Walter[4] failed to isolate any fungus in his study.

Hammekee and Ellis[16] have reported a distinct difference in the frequency of positive fungal isolates from the eyelids in different age groups. Such a relationship has not been observed in this study as the number of positive fungal cultures were small and also patients were only in the range of 26 years to 82 years.

Candida was the commonest fungus isolated in this study (5 percent). This agrees with the report of Kharazo[8] who observed growth of candida in 5 percent of cases out of 1122 eyes studied for fungal flora. It was observed that fungi alone was less likely to be present in healthy eyelids. Out of 100 swabs cultured both for bacteria and fungi, 6 cultures were positive for both, 60 only for bacteria and one only for fungus. This corresponds well with the observation of Sinha and Doss[18] who in 67 samples from healthy eyes found the presence of both bacteria and fungi in 11 samples and bacteria alone in 27 samples. There was no growth of fungus alone in any of their samples.

Over all antibiotic sensitivity pattern showed that ciprofloxacin was the most effective drug against aerobic bacterial flora of eyelids followed by kanamycin and gentamycin - two strains of staphylococcus epidermidis were resistant to ciprolfoxacin and also to other antibiotics. Superiority of ciprofloxacin over the other drugs against bacterial flora has also been reported by Irvine et al (1992) who found its effectiveness in his series as 97 percent.

Gram stained smears correlated well with the isolation of bacteria in cultures. By virtue of its sensitivity and simplicity Winceslous[17] have highly recommended gram stained smears in developing countries.

To conclude, we suggest that full attention should be directed towards the external tissues espeically lid lashes and margins and their microbial flora in the prophylaxis and prevention of post-operative infection. Use of plastic incise drapes to isolate the lashes and lid margins would be a wise suggestion.

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HEMATOLOGICAL PARAMETERS IN CULTURE POSITIVE NEONATAL SEPTICEMIA AND ITS IMPACT ON MORTALITY

Shafa Deva M.D; Bashir Charoo DCH, M.D ; Qazi Iqbal M.D ; Mushtaq Ahmad M.D; Rashid Hamid M.D; Khalida Hakeem M.D; Wajid Ali M.D; Prof. Masood-ul-Hassan M.D .

Abstract: The study was conducted in the Neonatology section of SKIMS , Soura to find out hematological changes in culture positive septicemia and their impact on mortality.

In a period of 1 year from May 98 to June 99 , 25 culture positive cases were detected from a total of 100 cases admitted with suspected septicemia. Hematological tests were routinely conducted on all the cases. Klebsella was the predominant organism isolated in 52% of cases. A fall in Hemoglobin was seen in 90% cases and in 100% of the cases of Klebsella with no effect on mortality. Fall in total leucocyte count was seen in 36% cases with 100% mortality. Of this Klebsella constituted 46% with 100% mortality. Thrombocytopenia was found in 36% cases with a mortality of 88.8% . Of this Klebsella accounted for 46% with 100% mortality. A mortality of 6.25% was also seen in cases with normal platelet count which is statistically insignificant. Abnormal coaguloram was seen in 56% cases with 64% mortality. Gram negative infection was the major culprit for coagulation defect , with Klebsella the topmost .

Key Words: Neonatal Septicemia, Klebsella , M - ESR , CRP , Band cell count , mortality.

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Introduction

Neonatal sepsis remains a formidable challenge in India , accounting for great deal of morbidity and mortality - about one fourth to half of neonatal deaths[1]. Symptoms and signs are very subtle and quite non specific . They are mimicked by a variety of neonatal conditions and the definitive diagnosis is made by recovering the organism from blood, CSF or urine. A variety of indirect tests are also used to identify septicemia because the sensitivity of a single blood culture is only 80%[2]. These tests include total leucocyte count , ratio of immature to total leucocyte count (band cell count), morphological alterations in WBC's and acute phase reactants (CRP & M-ESR). Elevated, depressed and unchanged total leucocyte counts are all consistent with a diagnosis of sepsis[3]. However , neutropenia is a better indicator of infection with higher mortality[1,4]. Band cell ratio of (0.2 has been taken as a cut off value in the diagnosis of sepsis[5,6]. Qualitative changes in WBC's have been found to be associated with sepsis. In a study the incidence of toxic granulation was 75% , vacuoles 25% and Dohle bodies 35%[7].

Mild to moderate fall in hemoglobin has been seen in neonatal sepsis after 2nd - 3rd day with inconclusive effects on mortality.

Platelet count of less than 100,000 has been found to be one of the indirect parameters of sepsis[1]. Significant thrombocytopenia with DIC is associated with a very high mortality.Thrombin, prothrombin and partial thromboplastin times used for assessing the coagulation mechanism are prolonged in sepsis with DIC-most commonly in Gram negative sepsis.

CRP- a globulin seen in infection and inflammation has been shown to have a sensitivity of 80 -90% in various studies. A good response to antibiotics was indicated by early return of CRP values to normal.

Micro ESR (>10 mm in Ist hr.) is another parameter used in rapid diagnosis of sepsis.

Material & Methods

100 neonates admitted with suspected septicemia were screened by blood culture, CSF culture and urine culture on the day of admission . Complete hematologic tests were done on Ist day and repeated on 3rd and 5th day in culture positive cases . Blood for culture was taken from a peripheral vein after properly sterilizing the site first with 70% alcohol and then with 2% tinct iodine. Five ml of blood was sent for culture. Urine for culture was collected by suprapubic puncture after proper sterilization. CRP estimation and M - ESR

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was done on Ist , 3rd and 5th days after cultures. A conc. of CRP of 0.8 mg/dl was taken as positive. Micro ESR was determined using micro hematocrit tubes of 75mm length and 1.5 mm internal diameter by the wintrobe method. A value of > 10 mm was considerd suggestive of infection . TLC was done in a standard Neubaur chamber with special attention to WBC morphology. Hemoglobin estimation was done by Colorimeter using Cyanmet- hemoglobin method . Platelet count was done under high power microscopy.

Coagulation profile was done and in cases showing abnormality , fibrin degradation products were assayed to rule out DIC.

Observations

Out of a total number of 100 cases of suspected septicemia, 25 cases were blood culture positive and CSF & urine cultures were sterile in all cases.

Klebsella was isolated in 13 (52%) . S. typhi in 5(20%) , S. aureus in 3(12%), E.Coli in 3(12%) and pseudomonas in 1(4%) of cases. C-reaction protein was found raised in 100% cases of Pseudomonas and S. typhi culture positive cases and in other types of sepsis also it had a high correlation, however it did not have a significant bearing an mortality.

Leucopenia (TLC <5000/mm^3) was seen in 30.76% cases of Klebsielb positive sepsis and 33.3% cases of E. Coli positive sepsis and mortality in such patients was 100%.

Band cell count of >30% was seen in 78% of culture positive cases, but not with a very significant effect on mortality.

Morphological changes were seen in 32% of culture positive cases with very insignificant effect on mortality.

Abnormal coagulogram was seen in 56% of culture positive cases with very high mortality rate of 64.28% while as mortality was zero in cases with normal dcoagulogram.

Micro ESR

S.No.	Organism	> 10 mm		<10 mm	
		%N	Mortality	%/No.	Mortality
1.	Klebsella n = 13	76.92% (10)	50% (5)	23.07% (3)	33.33% (1)
2.	S-aureus n=3	66.66% (2)	0%	33.33% (1)	----
3.	E-coli n=3	100% (3)	33.33% (1)	----	----
4.	S-typhi n=5	60% (3)	33.33% (1)	40% (2)	----
5.	Pseudomons n=1	100% (1)	100% (1)	----	----
	Over all n=25	76% (19)	42.10% (8)	24% (6)	16.66% (1)

Probability of Expiry
Positive = Negative cases
42.1% . 16.66%
V Value >0.05 (not significant)
Sensitivity 60%
Specificity 17%

Discussions:

This study reflects the mortality with respect to hematological tests in culture positive neonatal sepsis . In our study 25% blood culture positivity was observed with Gram -ive constituting the highest %age (88%) of cases . Among the Gram -ive cases Klebsella constituted the bulk with incidence of 54%.

Platelet Count

Total cases = 25 (100%)	No.	Mortality	Survival
Platelet count > 1 lakh	64% (16)	6.25% (1)	93.75% (15)
Platelet Count < 1 lakh	36% (9)	88.88% (8)	11.12% (1)

Count > 1 Lakh = 64%
Mortality = 6.35%
P > 0.05 (not significant)
Count < 1 lakh = 36%
Mortality = 88.88%
P<0.05 (Highly significant)

Guha et al[4] has reported a mortality of 20 to 30% in Neonatal sepsis . We observed an over all mortality of 36% . Anemia has been reported to occur in septic neonates[8]. We observed a mild to moderate fall in haemoglobin which had no statistically significant effect on mortality.

Among acute phase reactants CRP had a sensitivity of 60%; micro ESR 60% sensitivity with 17% specificity ; band cell count 58.8% sensitivity and morphological alterations in WBC's 62% sensitivity and 35.2% specificity.

Total leucocyte count varies widely in neonates[9]. We observed a total count of more than 15000 in 40% of cases. It was seen that no such case expired . A count of 5000 or less was seen in 20% cases with mortality of 100%. This goes in accordance with literature where TLC less than 5000 had mortality of 80%[10]. We also observed a count of >5000 but a count of even 8000 in 16% was also associated with 100% mortality. Low counts were more commonly seen in gram negative infection . In Gram -ive infection there probably is a depression of white cell clone leading to low counts and susceptibility to infection . Low platelet counts in sepsis have been observed in 50% of neonates[3]. We observed an incidence of platelet count of < one lac in 36% which is consistent with above literature. It was seen that these cases had a persistent fall in platelet counts over the observed days. We observed a mortality of 88.88% in association with thrombocytopenia. Klebsella was commonly associated with thrombocytopenia while E. Coli did not cause it.

We found an abnormal coagulogram in 56% cases with an expiry of 64.28%. Klebsella was commonly associated with abnormal coagulogram (69.23%) with an expiry of 66.66%. In normal coagulogram group in klebsella infection there was no mortality. Similarly in S. aureus septicemia there was no abnormal coagulogram and no expiry. Our observation of a highly significant relationship between abnormal coagulogram and mortality is an indication that séptic neonates had DIC. Other observers have also noted abnormal coagulogram in sepsis with 54.03% mortality which tallies with our results. Gram +ive septicemia had no impact on coagulation.

Thus to conclude ; the study shows that decreased leucocyte counts, low platelet count and DIC have a very significant relationship with mortality and with respect to individual infections Gram -ive infection is the major culprit causing these. Among Gram -ive infections, Klebsella sepsis is the prime organism causing these defects.

Besides aiding diagnosis these tests also have a prognostic significance and ancillary treatment in the form of exchange transfusions and component therapy may improve the outcome.

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CLINICAL ASSESSMENT OF INTRAUTERINE FOETAL WELL BEING BY NON-STRESS TEST

Rubina Khan, Mohammad Ashraf Kar

Abstract: One hundred patients in the age group of 20-35 years with the gestational period between 36-41 weeks formed the material. Reactive & non-reactive patterns were obtained on non-stress test in patients complicated by pre-eclamptic toxaemia, prolonged pregnancy, pregnancy associated with essential hypertension with intrauterine growth restriction, combined P.E.T. & diabetes mellitus with previous LSCS, anaemia, previous still births i.e. conditions predisposing to placental dysfunction. Reactive non-stress test was found highly indicative of foetal well being & can be confidently used in determining the optimum time for delivery in cases with pre disposition to placental dysfunction & reduce the casarean section rate & at the same time improve the perinatal mortality. A non reactive non stress test was not found very reliable, however it warns the obstetrician and shows the need for further testing & evaluation of other parameters of maternal and foetal conditions rather than intervention on the basis of non reactive non stress test alone.

Key words: Non-stress test, Foetal Activity Acceleration Determinatin (FAD)

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Introduction

The art & science of obstetrics has advanced to such a level of sophistication that today's physician & his patient expect not only a favourable outcome but the most favourable outcome possible. This remarkable change is to a greater extent influenced by the development in the methods of assessment of foetal well being. The accurate evaluation of foetal well being is essential in the management of high risk patients whch frequently require pre term delivery from an unfavourable or hostile intrauterine environment.

Assessment of foetal well being must satisfy several requirements if it is to approximate the ideal. The test must be

1. Easy to administer a large population
2. Be inexpensive
3. Have results readily available.
4. have a high degree of co-relation with the clinical outcome.

FHR. acceleration associated with foetal activity has received a growing attention as a sign of feotal well being & has been evaluated as a simple test for antepartum assessment of feotal well being.

The foetal activity acceleration determination (FAD) is a non-stress test for gross evaluation of utero-placental foetal reserve, & has been used to screen the antenatal patients at risk in order to identify those needing more careful attention.

Non-stress test (NST)

1. Reactive NST - acceleration of FHR in response to foetal movement is a reactive NST.
2. Non-Reactive NST- Lack of foetal heart rate acceleration in response to foetal movement is a non reactive pattern of NST.

Material & Methods

The present study was conducted on one hundred cases at SMGS hospital attached to Govt. Medical College, Jammu. The test was performed on the cases where the foetus was likely to be at risk of placental dysfunction & included the conditions like prolonged labour, hypertensive disorder of pregnancy, severe anemia, previous intrauterine foetal death, previous still birth, previous cesarean section & also patients where IUGR was suspected clincially. In hypertensive disorder of pregnancy, severe anaemia, previous intrauterine foetal death, previous still birth, previous cesarean section & IUGR patients tests were peformed at 36 weeks or later, at weekly intervals till delivery depending upon when patients reported to hospital.

For non stress test patients were placed in semi fowler position with the head elevated at 30 degree to prevent supine hypotension. B.P. was checked initially then every 15 minutes. Foetal heart rate was recorded by ultra sound

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transducer placed on the maternal abdomen, were signal was best heard. The base line foetal heart rate was recorded for ten minutes along with foetal movements. When foetal movement did not occur within ten minutes, sound stimulation with the help of tape recorder, the head phone of which was applied to foetal head with a constant volume. The test was discontinued when two foetal movements occurred with concurrent foetal acceleration determination & FAD had a regular configuration. The result of NST were correlated with the out come of labour especially with regard to clinical evidence of uteroplacental insufficiency, as determined at the time of delivery & immediate neonatal period. The following patterns were obtained on nonstress test.

Reactive Pattern:-

There were two or more foetal activity determination per 20 minutes of more than 15 beats per minutes. FAD had a smooth regular configuration.

Non Reactive Patterns:-

There were no foetal movements either spontaneously or with the sound stimulation & no demonstrable foetal heart rate change in response to stimulation.

Results

Distribution of cases regarding predisposition to placental insufficiency concluded 49 cases of hyper tensive disorders of pregancy (PET), one case of pregnancy with essential hypertention with intra-uterine growth restriction, 26 cases of prolonged pregnancy, 1 case with combine PET and diabetes mellitus, 12 cases of pregnancy with previous L.S.C.S., 6 cases of pregnancy with anaemia and 5 cases of prenancy with previous Stillbirths.

Table-1: Outcome of NST in cases of study

Result on NST	No. of Cases	No. of Tests
Reactive	92	105
Non-Reactive	8	12
Total	100	117

Table-2: Relationship of onset of Labour to final results on NST

Result on NST	No. of Cases	Onset of Labour			
		Spontaneous	%	Induced	%
Reactive	92	33	35.80	31	33.60
Non-Reactive	8			3	37.50

Table-3: Complication during Labour in relation to final result on NST

Result on NST	No. of Cases	Meconium Staining of Liquor	%	Foetal Distress On Ascultation	%
Reactive	92	—	—	—	—
Non-Reactive	8	6	75	6	75
Total	100	6		6	

Table-4: Nature of Deliveries in Relation to Results on NST

Result on NST	No. of Cases	Nature of Deliveries				
		Normal	%	Outlet Forceps	LSCS	%
Reactive	92	64	69.50	—	28	30.40
Non-Reactive	8	3	37.50	—	5	62.50

Table-5: Indication of LSCS

S.No.	Indication	No. of Cases
01.	Pregnancy with cephalopelvic disproportion	3
02.	Pregnancy with PET with failureof induction	12
03.	Prologned pregnancy wtih failure of induction	12
04.	Pregnancy with previous two lscs	1
05.	Pregnancy with foetal distress	5

Table-6: Relationship of APGAR score to final NST results

Result on NST	No. of Cases	APGAR Score					
		0-5		5-7		7-10	
		1 MT.:	5 MT	1 MT:	5 MT.	1 MT.:	5 MT
Reactive	92			2	—	90	—
Non Reactiv	8	2	1	—	—	5	—

Table-7: Incidence of Perinatal mortality in relation to result on NST

Result on NST	No. of cases	Perinatal Mortality	%
Reactive	92	—	—
Non Reactive	8	3	37.50

Discussion:

In the present study maximum number of cases were primigravidae. The majority of cases were between 21-25 years of age and maximum number of patients were having pregnancy with P.E.T. and prolonged pregnancy.

In the present study on performing non-stress test, non-reactive pattern was obtained in 8 out of 100 cases and reactive pattern was obtained in 92 out of 100 cases. 33 out of 92 cases having reactive pattern underwent caesarean section out of these 33 cases, 3 had pregnancy with cephalopelvic dispropoportion, 12 had pregnancy with P.E.T. with failure of induction, 12 cases belonged to prolonged pregnancy with failure of induction, one case had previous two LSCS and five cases developed foetal distress during labour and babies were found having cord round neck. This shows non-stress test does not predict complication occuring during labour.

Schmidt et al[1] reported one case of diabetic mother in whom non stress test became non reactive from reactive and OCT became positive after 2 days. This shows changing clinical picture of the patients must be observed carefully and NST must be done frequently in such cases.

90 cases out of 92 cases in patients having reactive pattern on NST delivered babies with apgar score above 7 at 1 minute. This shows that reactive NST in the ante partum period reflects foetal well being. Two cases out of 92 belonging to the same group delivered babies with Apgarscore below 7 at one minute due to cord round the neck. Out of 8 patients with non reactive NST five had apgar score above 7 at one minute and one delivered with apgar score below 5 at one minute. Two cases in non reactive group delivered babies with apgar score zero. One of these patients delivered dead baby due to pregnancy with essential hypertension and other delivered an anaencephalic baby.

Reed and Miller[2] observed that patients with reactive NST showed an average 1 minute apgar score of 8.1 and a 5 minutes apgar score of 9.4. Non-reactive pattern on NST was observed in 7.54% cases of BuckShee et al[3] and 10.70% cases of Ciblis[3].

In our study NST was performed after 36 weeks of pregnancy. it was agreed that doing this test before 36 weeks could not benefit us in view of existing fascilities for looking after premature new bornes. Evertson et al[5] perfomed nonstress test at 34 weeks. Dovoe[6] performed non stress test before 34 weeks and initiated after 29 week.

Conclusion:

Reactive non stress test is highly indicative of foetal well being & can be confidantly used in determining the optimum time for delivery in cases with predisposition to placental dysfunction and reduced the caesarean section rate & at the same time reduce the perinatal mortality. A non reactive NST is not very reliable but warns the obstetrician and shows the need for further testing and evaluation of other parameters of the maternal and foetal conditions rather than intervention on the basis of a non-reactive NST alone.

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THE STUDY OF MATERNAL MORBIDITY AND AMNIONITIS WITH RESPECT TO PREMATURE RUPTURE OF MEMBRANES

Tabassum Parvez MD; Farhat Hamid M.D.

Abstract: The study evaluated the incidence of maternal morbidity in 100 cases of premature rupture of membranes which were taken in three groups, leaking with intact membranes group-I, leaking with absent membranes Group II, and control Group III. The Incidence of maternal morbidity in respect to febrile illness, breast and chest infection was seen maximum in leaking with intact membrane group, with lesser incidence in groups II and III. Increase in latent period was responsible for increased incidence of maternal morbidity. The policy of "Hands off" i.e, avoiding repeated vaginal examination after rupture of membranes and prophylactic use of antibiotics significantly decreased post partum morbidity due to endometritis, parametritis and pyelonephritis.

Key words: Ammionitis, Maternal Morbility, Premative Rupture of Membranes

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Introduction

Maternal morbidity due to premature rupture of membranes is defined as the temperature greater than 38 degree (100.4 of) on two separate occasions greater than six hours apart. Maternal morbidity depends on the duration of latent period elapsing between rupture of membranes to onset of labour. The presumptive diagnosis of amnionitis is based on the following:

a) Rupture of fetal Membranes,
b) Temperature greater than 38°C
c) Absence of any other obvious cause for fever including dehydration. A definitive diagnosis of amnionitis is established by observing purulent Amniotic fluid. Incidence of Maternal morbidity among three groups of premature rupture of membranes.

Maternal & Methods

Table: Incidence of Maternal Morbidity among three groups.

No	Group of cases	No. of Cases	Maternal Morbidity (No. %)
I	Patients with leaking and intact membrances	33	13 (39.39)
II	Patients with ruptured membranes	33	06 (18.18)
III	Control group	34	05 (14.71)

Remarks
X2df2 = 6.51
$P<.05$

OBSERVATIONS

From the above observation it is seen that in group leaking with intact membranes there is maximum incidence of maternal morbidity as seen in 13 patients i.e, 39.39%. morbidity seen in respect to febrile illness, and chest infection.

The incidence is lower in II and III groups showing 6 patients i.e, 18.18% in leaking with absent membrane, and 5 patients i.e, 14.71% in control group.

DISCUSSION

Increased latent period is probably responsible for increased incidence of maternal morbidity in respect to febrile illness, chest infection, breast infections, sub involution of uterus etc.

Roblec Thompson

In year 1952 in his study has shown that with long latent period and free drainage of amniotic fluid following rupture of membranes is more likely to result in intrapartum infection.

R.S.Cron has shown that to decrease maternal morbidity one should take up policy of "Hands off" that is avoiding repeated vaginal examination after rupture of membranes and guard against infection by early and judicious use of antibiotic.

Sangalang 1955-567 in his study of 60 cases has seen maternal morbidity in 20 cases, 16 had positive cervical cultures with B coil and hemolytic streptococci as predominant organism. Response to antibiotics was remarkable with no post partum mortality. Amnionitis study by various authors in association with premature

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rupture of membranes is shown as under:

Clark study showed incidence of amnionitis	11%
Dyer, Ekvail, Wixed	12%
Lanier and associates	28%
Bryan's	23%
Berlin and Kaltreider	21%

Labherz used prophylactic antibiotic which significantly decreased post partum morbidity due to endometritis, parametritis and pyelonephritis. Richard (1964) showed that racial factors also influence morbidity when time interval is increased, it is five times more in negroes, as they apt to neglect themselves and are treated expectantly at home.

Burchell 1970 showed incidence of 1.7% maternal morbidity with latent period upto 12 hours, and increasing to 8.6% where latent period was over 48 hours.

Sacks and Baher year 1967, showed an incidence of maternal morbidity 1.3% in latent period of less than 24 hours and 4.8% in latent period of more than 24 hours.

In our study of 100 cases of premature rupture of membranes no maternal mortality was seen. This was because such patients seeked immediate hospital care, were admitted in time, keenly observed and carefully managed. Approach with caution was done in all cases of premature rupture membrane. Maternal morbidity was considerably reduced by earlier hospitalization of such patients, keen observation and judicious use of prophylactic antibiotics until completion of labour. Speedy obstetric care and management in such cases decreased maternal morbidity and resulted in better perinatal outcome.

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VELOPHARYNGEAL INCOMPETENCE
A COMPARATIVE STUDY OF DIFFERENT SURGICAL APPROACHES

Rafiq Ahmad

Abstract: *The Velopharyngeal portal is a valve whose chief function is to occlude the nasopharynx during speech. Adequate functioning of this valve is necessary for the correct production of many speech sounds and for preventing nasal regurgitation. When Velopharyngeal valve is incompetent, the resulting speech is characterised by nasal air escape and hypernasality. In this study different surgical methods of pharyngoplasty were evaluated in 20 cases of V.P.I.*

Key Words :- *Velopharyngeal insufficiency, Pharyngeal flap, Velopharyngeal valve, tonsillar transposition.*

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Introduction

Velopharyngeal insufficiency occurs in 20 to 30 percent of children born with palatal clefts after primary palatal repair. In addition, velopharyngeal incompetency may exist as a congenital defect, such as in individuals with a large nasopharynx. The most common treatment for Velopharyngeal incompetency is the pharyngeal flap. Pharyngeal flaps are generally successful when mesial movement of the lateral pharyngeal walls obturates the lateral ports. However, pharyngeal flaps are sometimes failures when they are placed below the point of lateral wall movement or when lateral wall movement is deficient for the width of the flap. Since the amount of lateral wall movement varies considerably among individuals. Some investigators have concluded that the width of the flap should be tailored to the amount of lateral wall excursion.

Other surgical procedures have been designed to obturate the nasopharynx in the anteroposterior dimension. Wardill, in 1928 and 1933, described a procedure that results in a permanent ridge of fibrous tissue on the posterior pharyngeal wall. The elevated velum contacts this ridge to achieve velopharyngeal closure. The ridge was created by making a transverse incision through the superior constrictor at the level of Passavant's ridge and suturing the tissue vertically.

In 1956, Hynes[1] described the construction of a permanent, often contractile ridge on the posterior pharyngeal wall. Flaps containing the salpingopharyngeal muscle were elevated from each lateral pharyngeal wall. The flaps were then rotated upward and inward to lie in the transverse mucosal defect created across the posterior wall of the pharynx. Hynes did not recommend the use of this procedure in children under age 10 years because "the parts are so small that the operation, although possible, becomes extremely difficult". Further, large adenoids often prevented the elevation of the flaps to the necessary height.

In 1968, Orticochea[2] described a sphincter pahryngoplasty in which two lateral flaps were raised that contained both the posterior faucial pillars and the underlying palatopharyngeus muscle. The innervation was kept intact from a branch of the pharyngeal plexus entering the muscle superiorly. The flaps were made as long as possible. An inferiorly based pharyngeal flap was raised from the posterior pharyngeal wall. The two lateral flaps were joined end to end in the midline, pharyngeal flap and the lateral edges rolled and sutured to one another, raw surface to raw surface. The flaps were placed in the oropharynx and were easily visible on oral examination.

The stated result was a diaphragm with a central orifice sphincter in which the "soft palate moves upward and backward, the lateral walls, formed by the palatopharyngeus muscles, move toward the midline, while the circular or angular posterior border, formed by the union of the posterior tonsillar pillars with the posterior pharyngeal flap, moves upward and slightly forward."

In 1970 and 1983, Orticochea reviewed his results with patients who had undergone this procedure. He rates the postoperative result by judging intraorally the range of motion during sustained "ah" phonation. He reported active sphinctering that diminished drastically with increasing age; that is, adult patients possessed rigid nonsphinctering structures.

The purpose of this paper is to evaluate the different

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surgical approaches for the treatement of V.P.I.

Material and Methods

This study concerns 20 patients who underwent pharyngoplasty by different methods between 1986 to 1997. Out of these 20 cases 12 were female and 8 were males. 14 cases had a megapharynx where soft palate was not able to meet the posterior pharyngeal wall without any evidence of submucous cleft, 6 cases had submucous cleft. Patients with clear cut cleft palate or repaired cleft were not taken in this study.

Velopharyngeal competence was assessed both pre and post operatively by using ratings of oro-nasal resonance, nasal air escape and lateral radiography. Oro-nasal resonance was rated as 1 in hyponasal, 2 is normal, 3 is mildly hyper nasal and 4 in severely hyper nasal.

Surgical Techniques :-

1. ***Superiorly based pharyngeal flap :***
   This method was used in 10 cases. Superiorly based posterior pharyngeal wall mucosal flap was raised and stiched to posterior border of soft palate after making it raw, leaving two lateral gutters.

2. ***Tonsillar transposition :-***
   Tonsil was dissected from tonsillar fossa in such a way that it was kept attached at lower pole. Then two vertical incisions were made in posterior pharyngeal mucosas laterally just near to posterior pillars. The posterior mucosal flap was raised by submucosal dissection, keeping it attached both superiorly as well as inferiorly. Then the tonsils were embedded under this flap and stiched in centre to each other, thus raising the velopharyngeal elevation.

3. ***Tonsillar Transposition and V-Y Pushback and Posterior Pillar Flaps :-***
   This method was used in 5 cases. In this method, in addition to tonsillar transposition, soft palate was pushed back by V-Y method and posterior pillar flaps along with palatpharyngeus was raised on both sides and stiched in midline with posterior border of soft palate.

Results

In group I, in superiorly based flap was used, flap take up was 70%, in 30% cases flap did not take up, hence proved failures. In 70% cases in which flap was successful, nasal obstruction was a complaint in only 20%, rest did not complain of nasal obstruction of nasal obstruction. Oral nasal resonance improved atleast by one grade. In long term follow up of these cases, there was recurrence of slight hypernasality in about 70% of cases.

In group II, in which tonsillar transposition was used, immediate results were excellent, but long term results were not satisfactory. About 50% of pre-operative hypernasality recurrence was seen in 50% cases, when 30% cases were lost to follow up.

In group III, in which tonsillar transpostion and V-Y pushback of soft palate was combined with sphincter pharyngoplasty by mucosal and palato pharyngeus flaps, the results were excellent. Resonance of voice and nasal escape both improved considerably and patient satisfaction with his/her voice was the best. There was no failure in this group.

Discussion

The various surgical prodecures have been tried in V.P.I. by different workers. Which one is the best?, remains still debatable. Seyfer et al[3]. showed no difference in success rates when the superiorly based flaps was used before or after 6 years of age. Riski et al[4]. showed the best results from the modified Orticochea operation in the 6-10 years age group. Jackson and Silverton[5] reported the best results for the sphincter pharyngoplasty in 10-30 years age group.

Bruce G. et al[6]. developed fish flap operation as a fine tuning operation to eradicate nasal escape in highly selected patients. They observed that the failure of 50 per cent of the patients to gain improvement in nasal resonance and the correction of nasal escape in only two of eight patients indicate that this operation cannot be advocated in the current form. They also reported their experience with Hynes operation and observed that nasal resonance results were acceptable in 82 percent, with obstructive side effects similar to others.

Denny et al[7]. reported their experience with augmentation of posterior pharyngeal wall with antalogous costal cartilage or bone. They observed that costal cartilage appears to be a superior choice for implant material.

Witt et al[8]. conducted a retrospective study to evaluate the efficiency of autogenous and non autogenous post pharyngeal wall augmentation. They concluded that non-autogenous materials usually extrude. Autogenous posterior pharyngeal wall augmentation does not result in speech improvement and secondly autogenous posterior pharyngeal wall augmentation does not impair nasal airway.

In our series the best results were obtained in group III in which tonsillar transposition was combined with V-Y pushback and sphincter pharyngoplasty. We recommend this method for larger defects particularly in older children. Posterior pharyngeal wall augmentation with tonsillar transposition is not good as its long terms results are not good. Only superiorly based posterior pharyngeal mucosal fly does not give patient satisfactory results.

So we recommend tonsillar transposition with V-Y pushback and sphincter pharungoplasty as a combined approach particularly for larger defects and older children.

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PAMIDRONATE IN BONE LESIONS OF MULTIPLE MYELOMA

K. Pavithran M.D., D.M.; C. Mukundan M.B.B.S.; Mathew Thomas M.D.

***Abstract:** Bone lesions in multiple myeloma have been a difficult condition to treat. Some times it produces severe bone pain. We used Pamidronate in nine cases of multiple myeloma with advanced lytic bone lesion (stage III) with severe bone pain, during the last 18 months. All except one patient, received pamidronate 60 mg IV, as a 3-hour infusion, every 4 weeks along with chemotherapy. All the patients improved symptomatically and noticed more than 50% reduction in bone pain within three months. None of them developed fractures during the follow up. Pamidronate was found to be safe and well tolerated.*

***Key words:** Biphosphonates, Multiple myeloma, Pamidronate*

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Introduction

Multiple myeloma is a neoplastic disorder characterized by accumulation of terminally differentiated plasma cells in the bone marrow accompanied by increase in osteoclastic activity and proliferation. Increase in osteoclast activity is related to osteoclast activating factors. These include tumor necrosis factor-beta, interleukin-1, and interleukin-6. This osteoclastic activity is not associated with a corresponding increase in bone formation. This results in problems related to bone like pathological fractures and bone pain and systemic complications like hypercalcemia, and neurological complications due to vertebral fractures. Several modes of treatment like definitive chemotherapy and radiation have been tried for the control of bone disease. The knowledge that disturbed bone remodeling is due to the activation of osteoclasts provides the rationale for the use of bisphosphonates in myelomatosis[1]. Biphosphonates, especially the second-generation biophosponate, pamidronate has given consistently good results in the treatment of the same. This study was undertaken as there is paucity of data available in Indian patients regarding the use of pamidronate.

Materials and Methods

Nine cases of multiple myeloma with advanced lytic bone lesions (stage III) and severe bone pain, attending the hematology clinic of medical college hospital, Thiruvananthapuram, seen during the last 18 months were included in the study. Performance status was assessed by European co-operative oncology group (ECOG) scale. All of them except one was given pamidronate as 60 mg IV infusion over three hours every 4 weeks, along with standard chemotherapy. Response to treatment was assessed by visual analogue scale (0 - no pain to 10 severe, intolerable pain) and repeat x-rays of the bones.

Results:

Nine patients with multiple myeloma were included in this study. There were 5 females and 4 males. Age ranged from 42 to 75 years. Five patients received vincristine, adriamycin and dexamethasone (VAD) based chemotherapy. Two patients were given adriamycin, BCNU, cyclophosphamide, melphalan (ABCM) based chemotherapy and the other two received melphalan and prednisolone. The number of cycles of pamidronate varied from 3 to 15. One patient had a performance status of 2, two patients had 1 and 3 patients each had a performance status of 3 and 4. Only one patient had hypercalcemia. Four patients had an abnormal renal function test. Three patients had severe bone pains and were bed ridden. With treatment 7 out of 9 patients had more than 50% reduction in bone pain at the end of 3 months and by 6 months 4 out of 7 were totally free from pain. The follow up period ranged from 3 to 24 months. Two patients died due to progressive disease. Out of the seven patients 3 are in complete remission (proved by bone marrow aspiration/ biopsy and serum electrophoresis). None of the patients developed any fractures during the follow up. Patient characteristics are shown in Table -1.

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TABLE-I

S.No.	Age	Sex	Dose	Chemotherapy	Performance Status	Calcium	RFT	Pain				Follow up	Total duration
								1	2	3	6		
1.	58	F	60x4	MP	3	N	N	8	7	5	0	Died	9 months
2.	60	F	60x5	ABCM	3	N	N	8	7	6	1	Alive-Pr	9 months
3.	72	M	90x6	ABCM	4	N	N	10	8	4	0	Alive-CR	7 months
4.	56	M	90x15	VAD-MP	2	N	Ab	8	6	4	0	Alive-Pd	15 months
5.	75	F	90x6	MP	4	N	N	10	8	6	2	Alive-CR	18 months
6.	50	M	90x3	VAD	4	N	Ab	10	8	5	-	Alive	3 months
7.	56	F	90x8	VAD	1	N	N	6	5	4	0	Alive-CR	8 months
8.	42	M	90x6	VAD	3	A	Ab	8	5	4	0	Died	6 months
9.	56	F	90x3	VAD	1	N	Ab	6	5	3	-	Alive	3 months

M-male, F-female, M-Melphalan, P-prednisolone, A-Adriamycin, B-BCNU, C-cyclophosphamide, d-dexamethasone, V-vincristine., RFT-Renal function test, N-normal, Ab-Abnormal, CR-Complete response, PD-Progressive disease.

Discussion

Biphosphonates are stable analogues of pyrophosphamates[2]. General structure of biphosphonates is given in the figure 1.

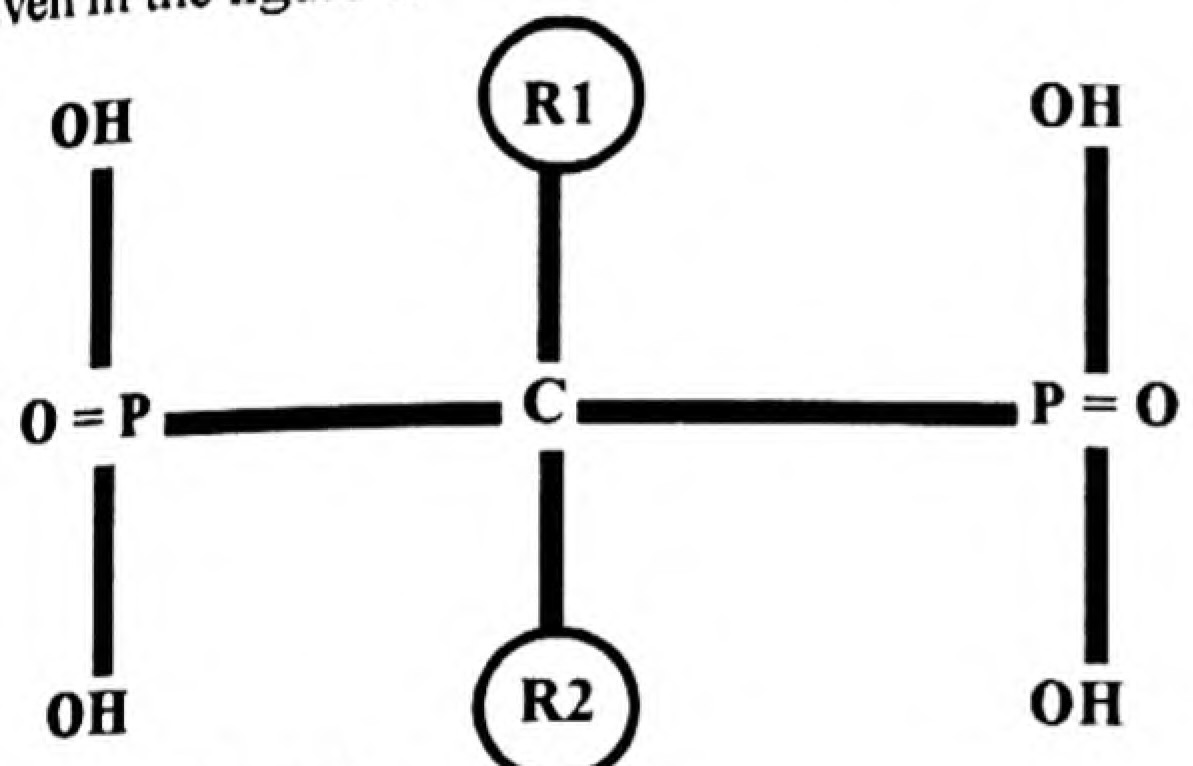

Figure-I

Side chain R1 gives the compound the ability to bind strongly with the bone material. R2 side chan provides potency to the compounds. R2 is different in different generations of biphosphonates.

Pamidronate is a second generation bisphosphonate with sulphur containing side chain R2. It is ten to hundred times more potent than the first generation biphosphonates as clodronate and etidronate. Zolendronate is a third generation biphosphonate with 100-800 times the potency of second generation bisphosphonate and thousand times the potency of first generation bisphosphonate[1]. This is due to the presence of an imidazole side chain. These were used previously to treat Paget's disease, osteoporosis and hypercalcemia. Due to the low potency of early generation drugs these were used in high doses, which predisposed to several adverse effects. This prolem has been overcome with the advent of newer and potent bisphosphonates.

Results of open label trials[3,4] with pamidronate showed that it is effective in reducing skeletal related events in multiple myeloma. In a study by Thieboaud et al[1] using 60mg of IV Pamidronate given monthly eight of nine patients has subjective improvements lasting 6-24 months.

Berenenson et al[5] in a randomized placebo controlled study has shown that ths drug reduces the skeletal related events in advanced multiple myeloma (Durie-Salmon stage III) like, pathological fractures, spinal cord compression ,and bone pain. So there is betterment in quality of life and performance status. Another important observation was that there was an increase in survival rates in those groups of patients in whom salvage chemotherapy was tried.

Mechanism of osteolytic metastases is the osteoclastic resorption of the bone adjacent to the tumour cells, by the production of osteoclast activating factor by the tumour cells[6]. The drug also decreases the levels of IL-6, which is an important growth factor for myeloma cell[8]. The latter action along with induction of apoptosis of myeloma cells gives this drug the virtue of antimyeloma property which may probably explain its effect on survival of patients seen in the trial of Berenenson et al[5].

Pamidronate is given in doses ranging from 6-90 mg as IV infusion over three hours. This is repeated every 4 weeks. Drug is continued as long as long as there is response. Our results with 60 mg of pamidronate IV were comparable to that by Thiebaud et al[1]. Moreover a recent economic analysis showed that pamidronate does not add to the cost of treatment[8].

Pamidronate is well tolerated with minor self limited acute phase responses which manifest as fever and lymphopenia in a minor proportion of patients during the first infusion. Theoretically large doses of the drug when infused over a short period results in accumulation of the drug in renal tubules which may result in renal toxicity. But in practice this is seldom encountered. Minor gastro intestinal side effects, demineralisation of bone, hypocalcemia, hypomagnesemia, hypokalemia, hypophosphatemia, thrombophlebits, toxic confusional states, conjunctivities and transient skin rashes have been reported in a few patients.

Conclusions

Pamidronate is a safe drug in the treatment of skeletal related events in multiple myeloma. It helps in improving the quality of life of individuals with multiple myeloma. It is well tolerated when given as IV infusion at a dose of 60-90 mg over 3 hrs. at 4 weeks interval with a lasting effect. It improves the survival rates in patients treated with salvage chemotherapy. In developing countries like India cost is a definite limiting factor for its use.

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MEDICAL RADIATION EXPOSURE OF OCCUPATIONAL RADIATION WORKERS AT SHER-I-KASHMIR INSTITUTE OF MEDICAL SCIENCES . 15 YEAR FOLLOW-UP

S.K. Koul; W.H. Andrabi; S.M. Abbas; Mohammad Ayub Bhat

Abstract; The measurement or asessment of doses is fundamental to practice of Radiological Protection. Monitoring of External Exposure by film or TLD badges is fairly cheap and simple and is generally used for all occupational workers. The occupational health service has the same role as in any other occupation. Facilities for medical management of cases of serious over exposures should be available.

These are some of the recommendtions of ICRP. Keeping the above in view radiation safety lab. of Medical Physics and Bio-Engineering Department at Sher-i-Kashmir Institute of Medical Sciences, Soura, Srinagar was entrusted the responsibility of personal monitoring programme of the Institute.

There are nine department using ionizing radiation with eighty three workers, working for the last fifteen years who are registered with radiation safety Laboratory of the department. The monitoring films are supplied and evaluated by personal monitoring section of Division of Radiological protection Baba Atomic Research Centre, Bombay.

Presented in this paper is detailed review of life time dose received by Occupational radiation workers (1982-98). The average life time dose of Radiation workers in case of department of Nuclear Medicine is 19.91 msv (maximum) and 1.27 msv (minimum) for the department of Immunology. Maximum no. of workers 80% fall in the category who receive life time dose below 10 msv no worker receives more than MPD in these two deptts. However only one worker belonging to the Radio-diagnosis received a life time dose 62.92 msv.

The reason for the low doses received by radiation workers is due to the adequate protection majors taken during the construction of the departments, Trained Technical staff, adequate protection devices constantly used and Routine surveys conducted in all the Radiation areas.

Key words:

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Introduction:

The medical use of ionizing radiation whether for diagnosis or treatment, not only results in the irradiation of the patient but also exposes occupational radiation workers to some radiation dose[1]. Non-occupational personal like patients, attendants, employees and visitors who are around radiation departments are also not spared. In India more than 50,000 x-ray machines are operating and another 1500 are added every year. In addition to this there are 116 Nuclear medicine centres and 130 teletherapy centres. In these centres there are 202 teletherapy units of which 168 use Cobalt, 14 use cesium and 20 use Linear Accelerator. Also, there are 95 centres which use Brachytherapy for the management of cancer. The number of facilities keeps on increasing and it becomes very essential to have a centralized radiation laboratory in all the centres to take care of radiation hazards, evaluation and control for its employees in particular and the public in general.

At Sher-i-Kashmir Institute of Medical Sciences (SKIMS), Soura Kashmir the radiation sources used in medical diagnositics, treatment and research include x-ray plants, sealed and unsealed radioisotopes. These facilities increase in number year by year. Thus the number of workers also increases. Radio-diagnosis, Nuclear Medicine Medical Physics, Radiotherapy, Cardiology, Cardiovascular thoracic surgery, Immunology, Gastroenterology, Neurology, Neurosurgery and Dentistry are the Departments where radiations are used for diagnosis and treatment of the disease. There are about 145 radiation workers in these departments[3].

Personnel monitoring service plays a big role in the protection of occupational radiation workers. The personnel monitoring at SKIMS is based on programme which was established in its present form in 1982. Extreme care is being taken to ensure radiation safety

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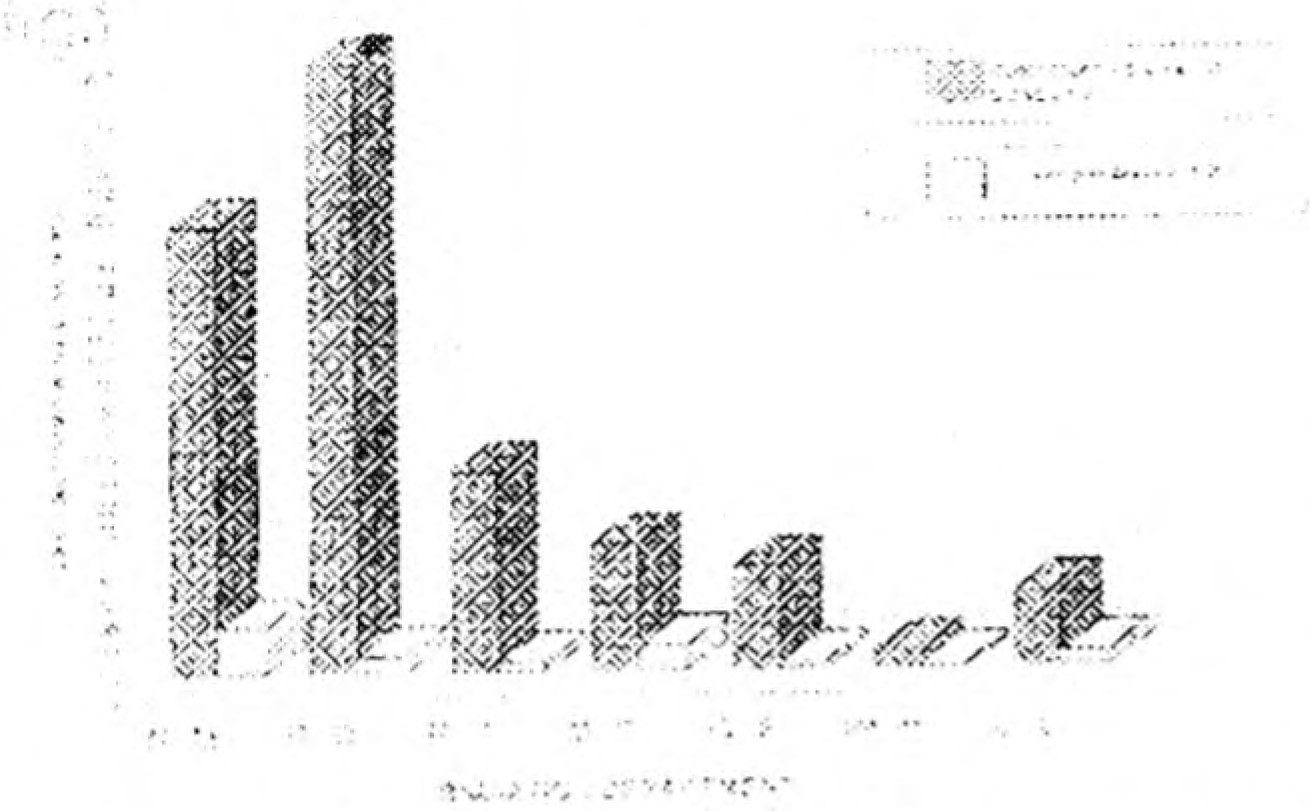
standard in all the aforesaid departments.

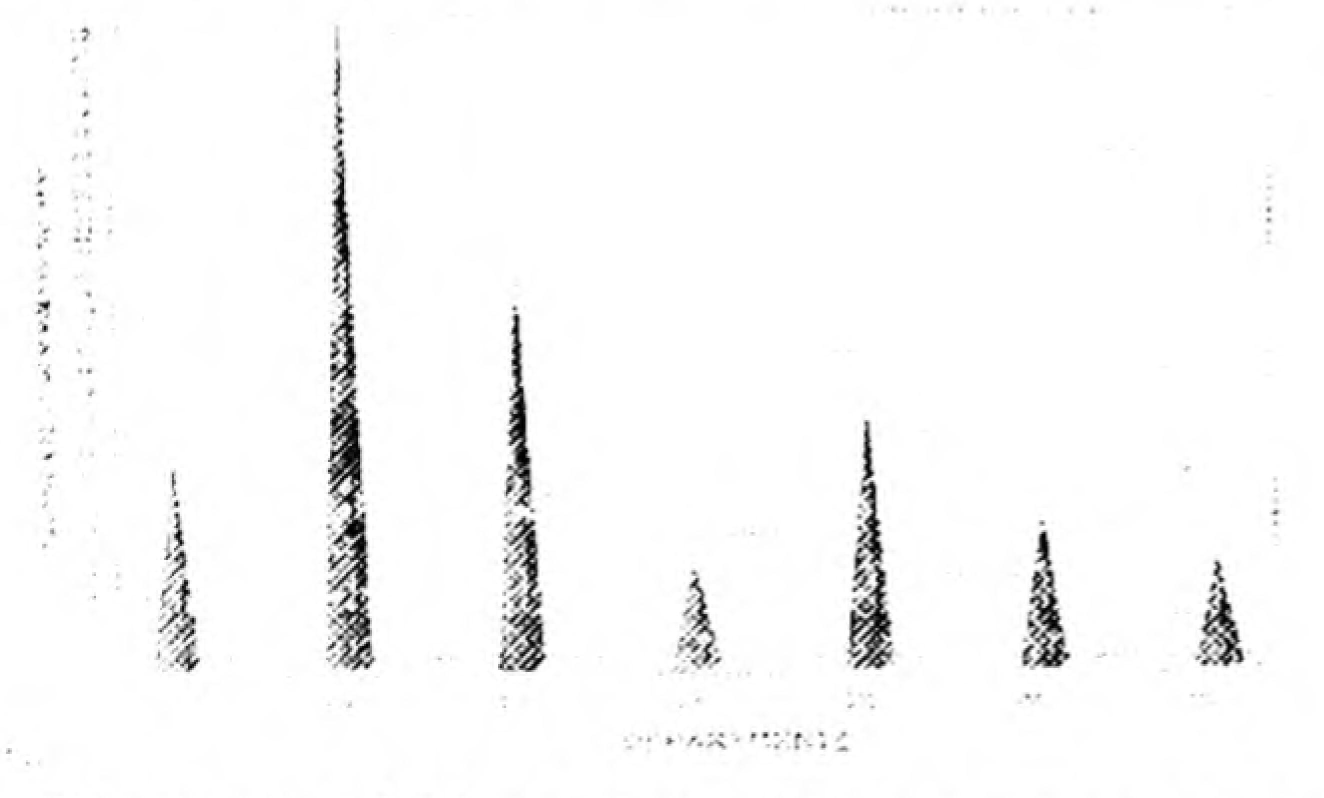
The prime factors responsible for good radiation hygiene of the department are:-

1. Careful planning and installation.
2. Quality tested and approval equipments.
3. Appropriate protective devices.
4. Trained and qualified staff.
5. Good work practice.



Ionizing radiations are not detected by our senses and in certain cases the exposed person may not be aware of his radiation exposure. Indirect methods have been devised to estimate the level of radiation exposure of a radiation worker or a radiation area. Film badge is one of the common device used all over the world for personnel monitoring.

The radiological safety group of Medical Physics and Bio-Engineering Department has been enstrusted to ensure a careful and balanced control of above factors together with its uninterrupted maintenance to achieve the goal of radiation safety and protection at SKIMS. Judicious combination of Time, Distance and Shielding help in attenuation and minimization of levels of radiations, thus bringing very close to the rule of Alara.[1]



The results of fifteen years of eposures received by radiation workers at this institute has been assessed and analysed in this study. Range of dose and maximum dose levels have also been revealed in this presentation which is aimed at providing information and summary of the results for use in the centres world over.

Marterial and Methods;

The radiation safety laboratory at SKIMS has adequate and update facilities to take care of:-

1. Personnel monitoring of all radiation workers.
2. Radiological Survey of all radiation installations and occupancies.
3. Calibration, quality control and output measurements of all radiation equipments.
4. Planning of new installations.
5. Radiation emergencies, if any.

The area monitoring and surveys are taken up regularly in accordance with the safety rule to check the radiation leakage etc.

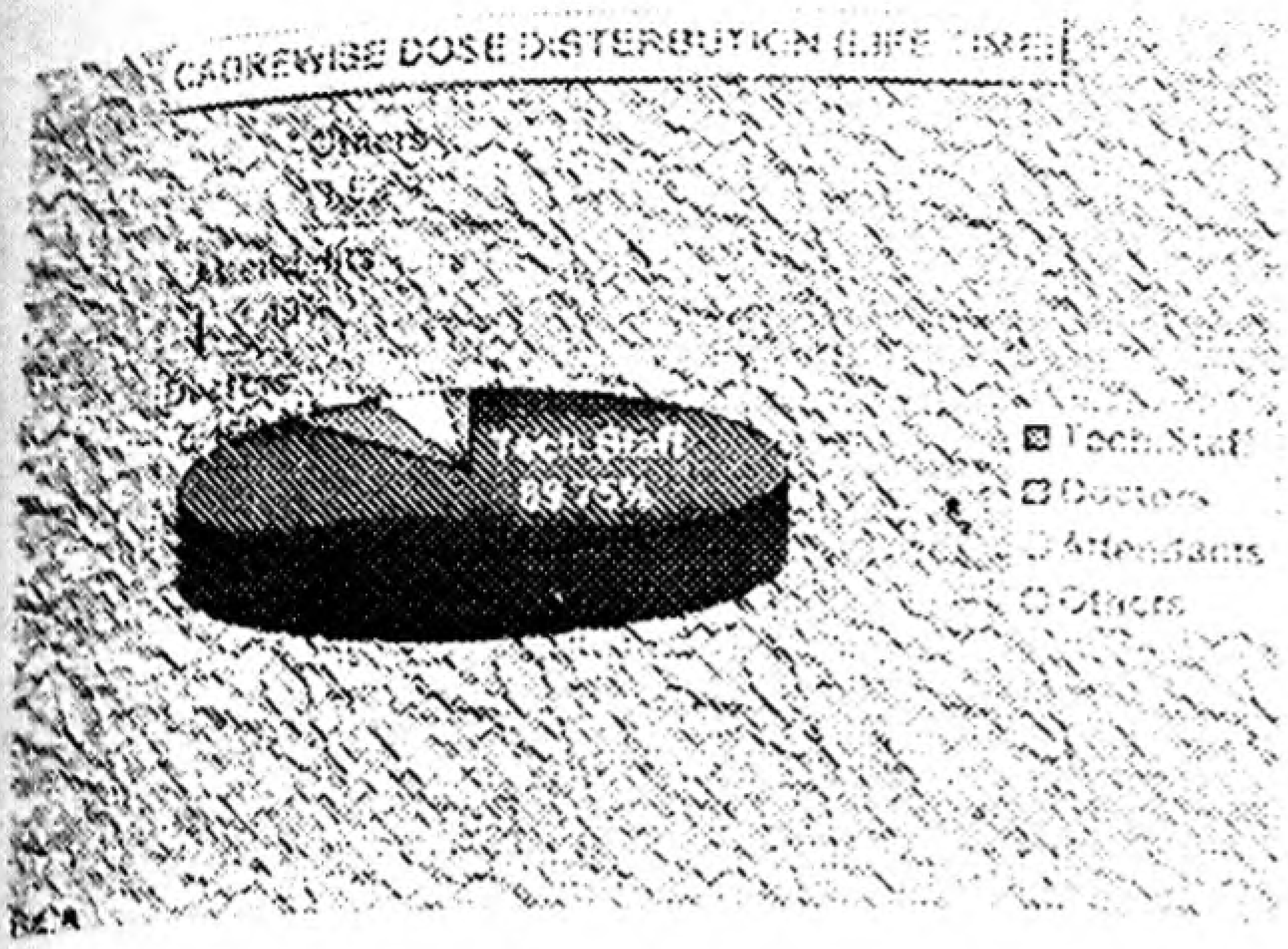
A person who is classified as radiation worker is registered with the radiation safety laboratory for routine personel monitoring. Badges for chest and writs are issued to each worker. Sometimes badge for head is also issued for use. Films of these badges are changed periodically, generally after a month in the radiation safety laboratory by the Incharge of the Laboratory. During the work in radiation hazard areas, a radiation worker wears the given film badge at the proper and visible place and at the point most representative of whole body exposure. Proper and particular boxes are used to keep these film badges safe from any mis-ues or overuse. These boxes are kept away from radiation prone areas. The used films are sent to Division of Radiological Protection, BARC, Mumbai, every month for evaluation.

A foolproof record keeping system has been adopted to maintain the dose report of individual worker and work places. This helps in the evualation of trends in exposures and the use of these records for medical and legal purposes. The radiation safety laboratory keeps a record of the exposure of an individually monitored person integrated over a calender year and over the entire period of his stay at the Institute. All the other matter concerning personnel exposure are also mentioned in his record.

Results and Discussions:

The dose equivalent limit HE for uniform whole body exposure for occupational Workers is 100 msv in a five year block which means 20 msv per year on average, with the further condition that the dose in any single year should not exceed 50 msv. To permit phased adoption of ICRP recommendations Atomic Energy Regulatory Board (AERB) has set a dose limit of 30 msv in any year upto 1998, however, a limit of 100 msv per five year block remains unchanged. if the individual tissues or organs are selectively irradiated the annual dose equivalent HT for any tissue or organ other than eye lens shall no exceed 500 msv and in case of eye lens it shall not exceed 150 msv; provided that the annual effective dose HE - sigma Wt. HT does not exceed 20 msv[5]

All the radiation workers of the Institute are covered by the personnel monitoring programme of Division of Radiological Protection, BARC, Mumbai through the radiation safety department of this Insititute, and from the radiation protection view, it is obligatory for every employer to know the radiation doses received by his employee during the routine work.



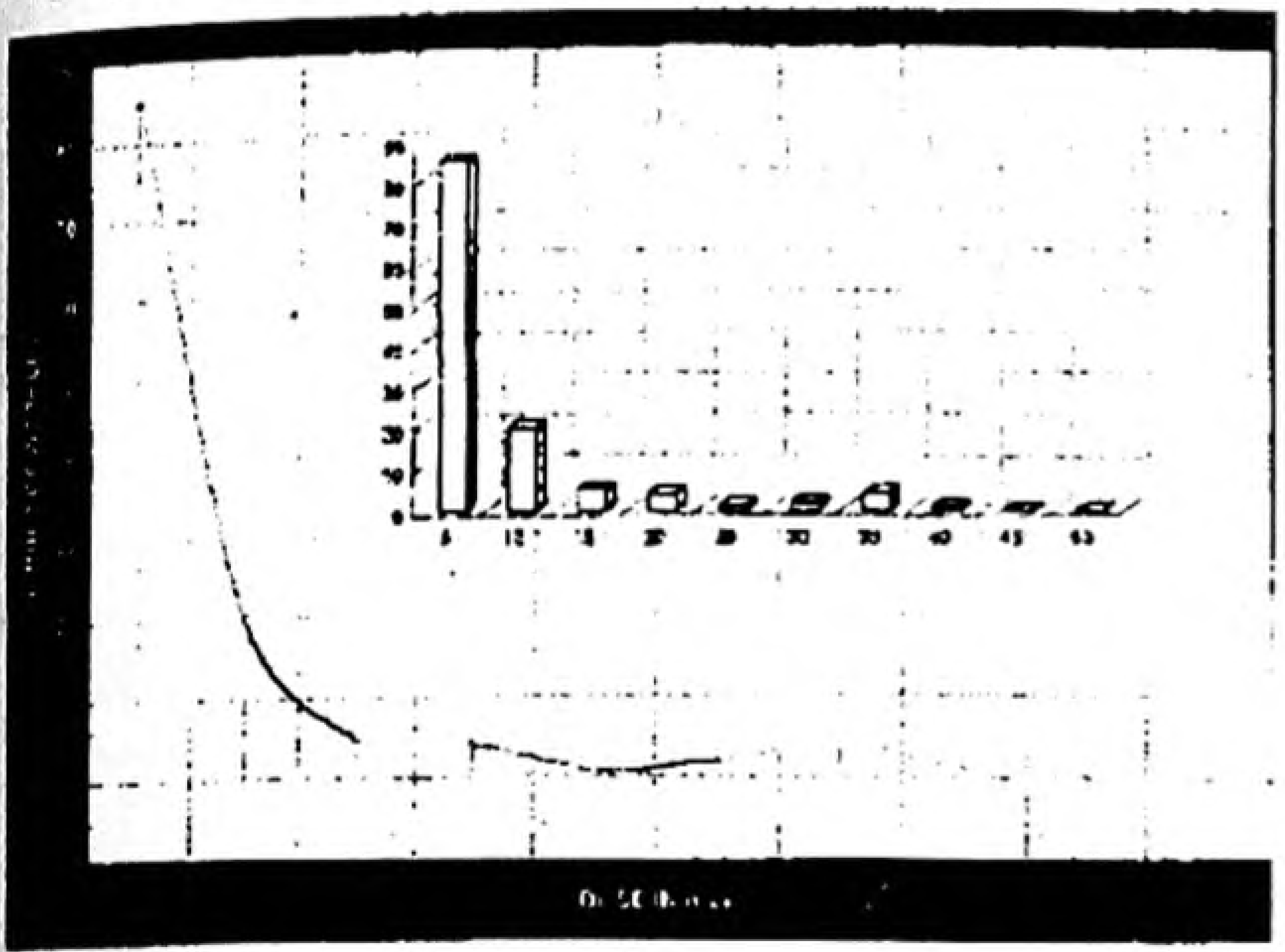


Fig. 1 represents the cumulative life time dose received by workers of different departments. It shows that radiodiagnosis department has collected the maximum dose which is expected because the number of workers is more in this department (Fig. 2) still the average individual life time dose for this department is well below the average dose recorded by department of Nuclear Medicine and other departments indicating that good protective measures and work practices are enjoyed by the department.

Table 1 shows the dose records of five workers from each department with five exposure levels. On examination of this table we infer that the maximum dose received is much less compared to permissible limits. This supports the same explanation that protective measure and work practices are very good, as no one has crossed the permissible limits.

All these figures and table clearly show that maximum individual dose is recorded in Nuclear Medicine department particularly by technologists as they are working with open sources during the processes of separation, solvent extraction, purification and elusion etc. in a radioisotope hot lab. of the department.

Table 1. depicts that one worker from department of Medical Physics and Bio-Engineering has received a high dose as compared to his other colleague, but well below the maximum permissible limits laid down by ICRP. On analysis it was seen that this high dose was received during his work in the department of Nuclear medicine, as the personnel from department of Medical Physics has to attend to jobs like planning, quality control and other day to day tests of radiation equipments and areas. In department of Nuclear Medicine the doses received by individual radiation worker is high, though within permissible limits, needs a special attention and care to arrive on principle of ALARA. Following are few measures:-

1. Additional shielding are to be provided and installed.
2. New and modern methods for extraction of TC 99m are to be increased, so that work is shared by many people and thus the dose is also shared.

There is no dose report available for department of Neurology and Neurosurgery as films issued to them were not returned for evaluation; this shows that they are irregular and non-serious about the radiation measurements and its hazards. The radiation workers from department of Immunology, Gastroenterology and Cardiology are defaulters in respect of radiation monitoring badges. It is worth-while to mention that various radiation based investigations like angiography, dental imaging, cardiac catherteriation and ERCPs etc. are performed by the Staff of these Departments.

The life time dose received by various categories of radiation workers are assessed and analysed (Fig.3). The technical staff received the maximum dose 89.75%. The doctors recorded 5.16% attendants 3.49% and others 1.52%. The maximum work load produces utilizing ionizing radiation is taken by technologists.

Nearly 70% of staff working in various radiation departments have recorded the dose below 5 msv (Fig. 4). This indicates that radiation safety and protection rules and regulations are ensured in our institute at all levels.

Last bt not least no worker of the institute has crossed the permissible limits recommended by ICRP and other regulatory bodies. One case was reported during the last fifteen years. On investigation it was found that his badge was lying inside the radiation room by mistake for sometime and hence the badge showed exceptionally high dose. Before the final results satisfied the radiation safety officer the person was not allowed to do any radiation work and the matter was investigated fully.

The person was subjected to rigorous medical investigation and it was fully ensured that the worker has not received the high dose.

Conclusion:

The observation of this study reveal that all radiation workers irrespective of their cardres, have received the dose well below the permissible limits. The routine radiation surveys and tests reveal that dose at various positions and occupancies produce no threats to permissible levels. The radiation safety record and work practice is good. This has been possible due to:

1. Close cooperation of workers of different radiation departments with Radiation Safety Lab of MP & BE Department.
2. Well equipped centralized radiation safety laboratory; with both modern and Sophisticated update technology and well qualified, trained, skilled and dedicated staff.
3. Full involvement of Radiation Safety Laboratory from planning of radiation equippment to quality control and work practice in every department of the Institute.

The practice of non-usage of monitoring film badge and other protective measures by some individual workers though has been reversed, yet needs a keen watch and surprise checks. Continuing educative programmes need to be conducted to acquaint all the staff about the use of radiation hazards and protective measures.

It is concluded with the remarks that a centralized laboratory with skilled staff and modern equipment for the surveillance of radiation exposures and planning of such radiation departments is a basic need for each and every Institute where ionizing radiations are utilized. Our results clearly show that our type of arrangement works well and ensure the safety of radiation workers in the Institute.

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FRACTURE-DISLOCATION OF TALUS PRIMARY BONE GRAFTING CASE REPORT

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ABSTRACT: We are reporting a case of Hawkins's Type III fracture-dislocation of talus in association with comminuted fracture of ipsilateral patella, which couldn't be preserved. Fracture-dislocation of talus was successfully treated by open reduction, cancellous bone grafting from the fractured patella and fixation, culminating in sound union and good function. This modality of management represents an addition to the surgical armamentarium for successful treatment of such severe injuries.

Key Words: Fracture - Dislocation, Talus, Bone Grafting.

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INTRODUCTION

Fracture–dislocation of talus is one of the most formidable challenges facing the modern orthopaedic surgeon. Perceived severity of the injury is reflected in Syme's[11] historical recommendation that primary below knee amputation is the appropriate treatment for open fractures of talus.

In 1919, Anderson[1] termed the injury 'aviator's astragalus' because of its preponderance in pilots of early aviation era. Nowadays, the presumed mechanism of injury, a reflection of modern mechanised age, is forced hyperdorsiflexion of talus against the anterior edge of tibia[1,2,3,5,6,7,8,10]. However, Peterson and Romanus[9] could produce typical patterns of talar neck fractures in cadavers by application of axial loads on plantar aspect, but not by hyperdorsiflexion. Progressive displacement of the body of talus usually results in one of the three basic configurations, proposed in Hawkins's[5] classification in 1970 after review of 58 cases. Type I-undisplaced vertical fracture through talar neck, Type II-displaced fracture of talar neck with subluxation or dislocation of subtalar joint, Type III-displaced fracture of talar neck with dislocation from both subtalar and ankle joints. Type IV includes variants reported later by Canale and Kelly[3] in their classic review of 71 talar neck fractures described 3 cases, which were associated with talonavicular dislocation or subluxation in addition to Hawkins's Type III picture. Pantazopoulos et al[7] reported a talar neck fracture with dislocation of head fragment, while the body remained reduced.

Potential for damage to the tenuous blood supply through a small area of vascular access is the key to the mechanism and management of fractured neck and fracture-dislocation of talus. Vascular supply is derived from three main sources-1) through the neck, 2) through the foramina in sinus tarsi and tarsal canal and 3) through the foramina on the medial surface of the body[4,12]. Hawkins's classification[3,5,10] correlates well with potential vascular compromise to talus. In Type I only one source of blood supply, which enters through the neck, may be disrupted. In Type II at least two sources may be involved-one entering through the neck and the other through the sinus tarsi and tarsal canal. In Type III all three sources may be lost. The incidence of avascular necrosis of the body increases with the severity of injury and the grade of fracture. In Type I no avascular necrosis is expected, in Type II the incidence is 30-42% and in Type III a staggering 75-100%[3,5,6,8].

The talar injuries that pose problems are Hawkins's Type II, III and IV fractures, total dislocation of talus and fractures with loss of bone. The attendant plethora of complications including skin necrosis, infection, delayed/non-union, mal-union, altered biomechanics, avascular necrosis of the body of talus and osteo-arthritis of sub-talar and ankle joints often require secondary procedures.

CASE REPORT

A 25-year old male, an unrestrained driver of a car, was involved in a road traffic- accident and admitted to orthopaedic ward with mild head injury, open fracture of right knee and injury to right ankle and foot. He sustained a 7-inch oblique, deep laceration over the anterior aspect of right knee with an obviously comminuted, open fracture of patella and partial denudation of articular cartilage of medial femoral condyle. Right ankle and proximal foot were deformed and grossly swollen with no evidence of

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neurovascular problems.

X-rays of right knee showed a markedly comminuted fracture of patella (Fig 1a & 1b). X-rays of right ankle and foot showed Hawkins's Type III fracture neck of talus with evident posterior dislocation of body of talus together with a comminuted fracture of medial malleolus (Fig 2a & 2b).

Soon after initial assessment and resuscitation, he was taken to theatre without any delay. Surgical toilet and debridement of laceration of knee was performed. On exploration, the laceration extended deep to the knee joint with severed quadriceps, patella was grossly comminuted, part of medial condyle of femur was denuded of articular cartilage and knee joint was full of clots and fragments of bone. Menisci, cruciate and collateral ligaments were intact. Pâtellectomy was performed after thorough irrigation and further debridement, excised fragments of patella were preserved, quadriceps mechanism was restored and wound closed in layers.

After an unsuccessful attempt at manipulative reduction of fracture- dislocation of talus, open reduction was undertaken through anteromedial approach. The fracture-dislocation was exposed by a 10cms longitudinal incision anterior to the fractured medial malleolus, taking care to preserve its soft tissue attachments. After reduction of fracture- dislocation, a large cavity was found between the fracture ends of talus. Filling the cavity with bone graft was considered imperative, comminuted patella being an obvious and ready source. The fracture gap in talus was packed with cancellous bone chips from patella and fixed satisfactorily with a cancellous screw. Then the fracture of the medial malleolus was also reduced and fixed in anatomical position. Wound was closed in layers and leg immobilised in an above knee plaster cast.

The post-operative period was uneventful. He was mobilised non-weight bearing and allowed home. On review at six months following injury, he achieved full range of movements of knee and good range of movements of ankle and subtalar joints. X-rays of right ankle demonstrated complete union of talar fracture.

DISCUSSION

Rational management of talar neck fractures depends on displacement/dislocation, comminution, soft tissue state and open injury with the extent of contamination. Best results are achieved and complications minimised by prompt, perfect, stable anatomical reduction and fixation of talus although vascular compromise and subsequent avascular necrosis are dictated by the degree and severity of the injury itself.

Type III fractures of neck of talus with displacement and posterior dislocation of the body constitute a surgical emergency because of the potentially disastrous consequences of skin necrosis and secondary injury to neurovascular structures due to pressure. Skin necrosis and infection virtually guarantee a poor result. In most instances, closed reduction is impossible and the need for open reduction varies from 70-100%. About 25% are open injuries, demanding surgical toilet and debridement. Frequently associated fracture of medial mallolus, or else osteotomised medial malleolus render access easy. Meticulous care is exercised to preserve the medial soft tissue attachment to talus as this may well be the only remaining source of vascular supply. A single attempt at closed reduction may be justified. If unsuccessful, there should be no hesitation in proceeding to open reduction of dislocated body of talus, if necessary with the help of a Steinman's pin in os calcis and stable anatomical fixation of talar neck fracture with cancellous lag screws and possibly Kinschner wires to prevent rotation. Cannulated screws over Kinschner wires are convenient. If skin is under tension, delayed closure at 5-7 days is optimal.

In the event of extreme comminution of the body of talus or contaminated wounds with likely sepsis, excision of the body of talus, followed by Blair type fusion [2] or tibiocalcaneal fusion at the earliest safe opportunity yields superior results.

In Hawkins's Type III fractures, most of the poor results are attributable to avascular necrosis of the body of talus. The incidence of avascular necrosis is variable without statistical significance. The main supply to the body of talus derives from a complex of vessels originating from sinus tarsi and tarsal canal [4, 12]. It would be surprising if these vessels were not damaged in subtalar dislocation. Certainly, when the body of talus dislocates posteriorly, all soft tissue attachments must be torn. If the bone is entirely deprived of blood supply, avascular necrosis is inevitable. Hence the virtual inevitability of avascular necrosis in Type III injuries, except when medial deltoid ligamentous attachment to talus is intact. Pennal[8] reported 100% avascular necrosis (14 out of 14 cases), Hawkins[5] 90% (18 out of 20), Canale and Kelly[3] 84% and Kenwright &Taylor[6] 75% (3 out of 4). Not all patients with avascular necrosis develop significant disability, nor need surgery. About two-thirds of patients are best treated conservatively-by keeping non weight-bearing or patellar tendon bearing brace as a satisfactory alternative. Surgery is recommended if the body of talus undergoes collapse and becomes symptomatic. Many procedures have been described for degenerative arthritis following avascular necrosis. In 1943, Blair[2] described a type of tibiotalar fusion, in which the body of talus was excised and a sliding cortical bone graft placed between the anterior aspect of tibia and the head of talus. Talectomy, accompanied by

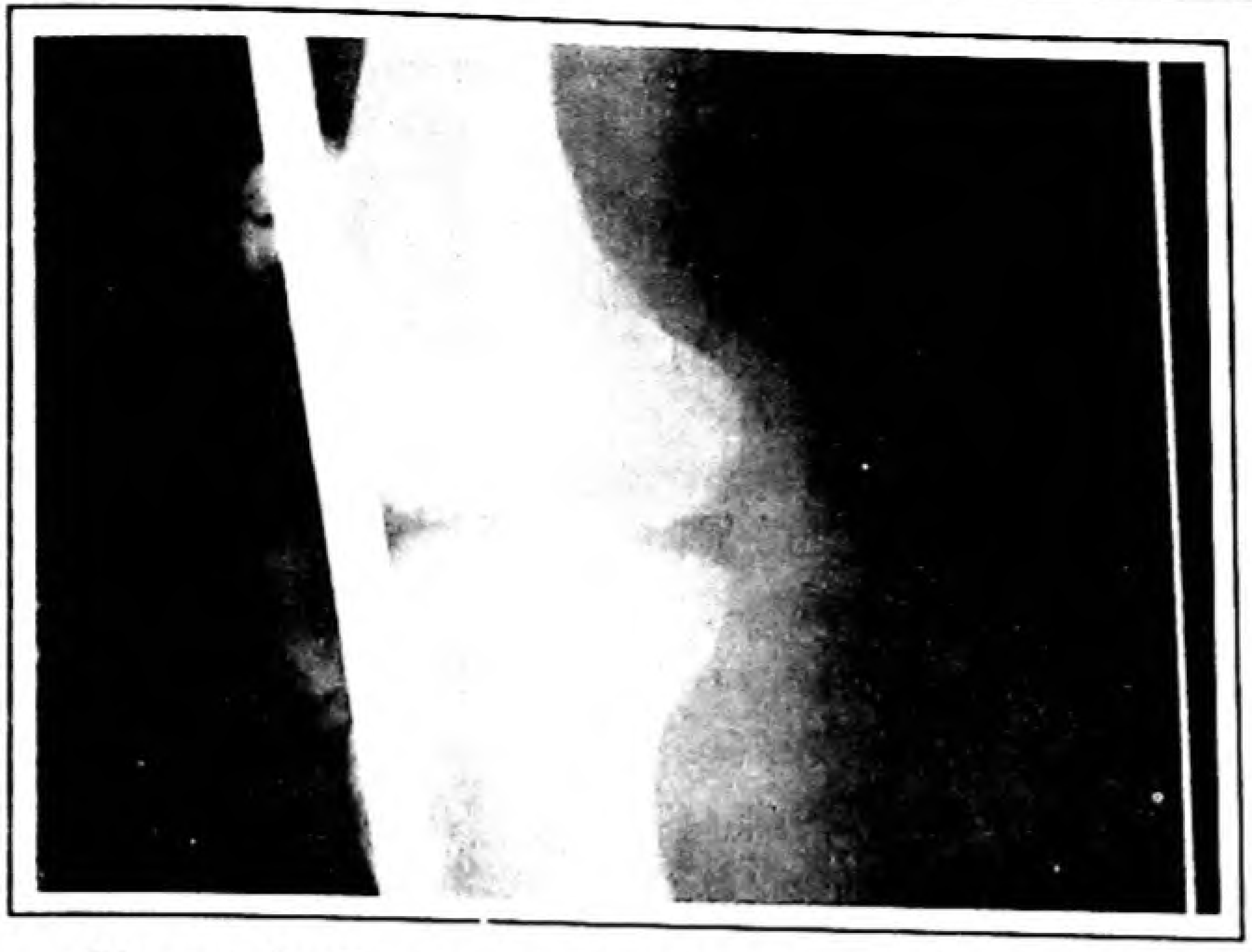

Figure Ia Comminuted fracture of Patella.

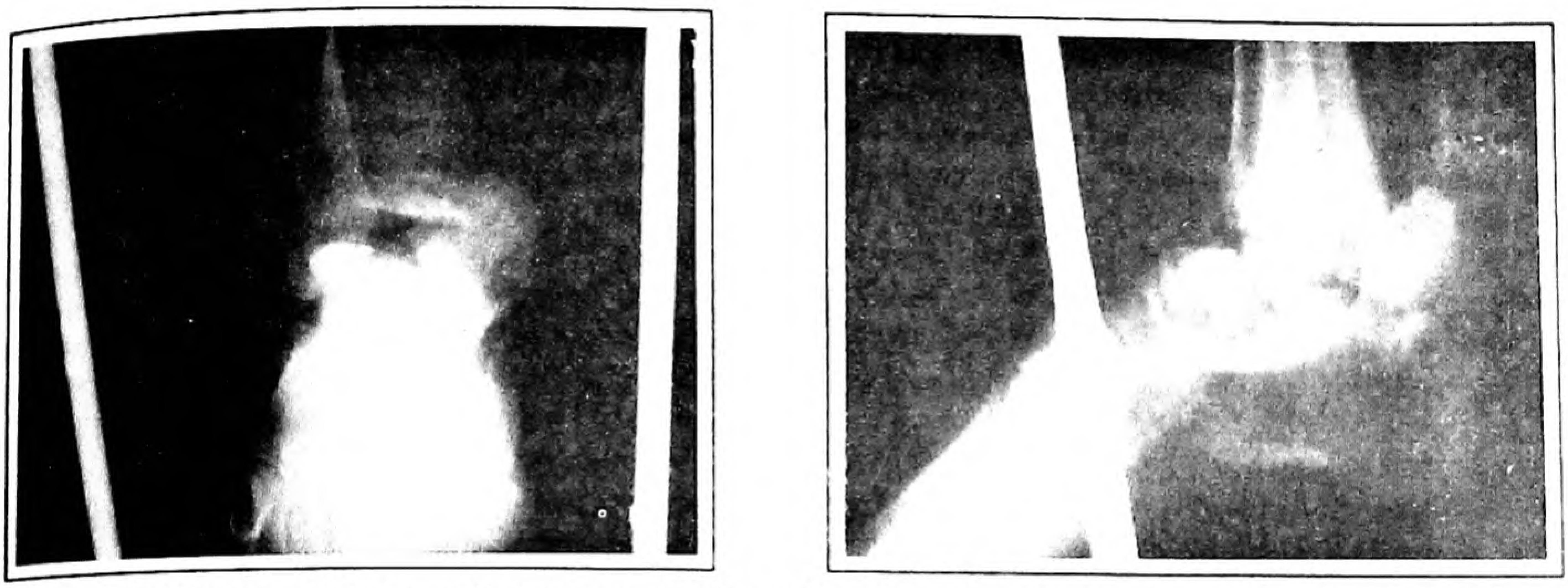

Figure Ib & Ic Hawkin's type III fracture of talus with eident posterior dislocation of body of talus.

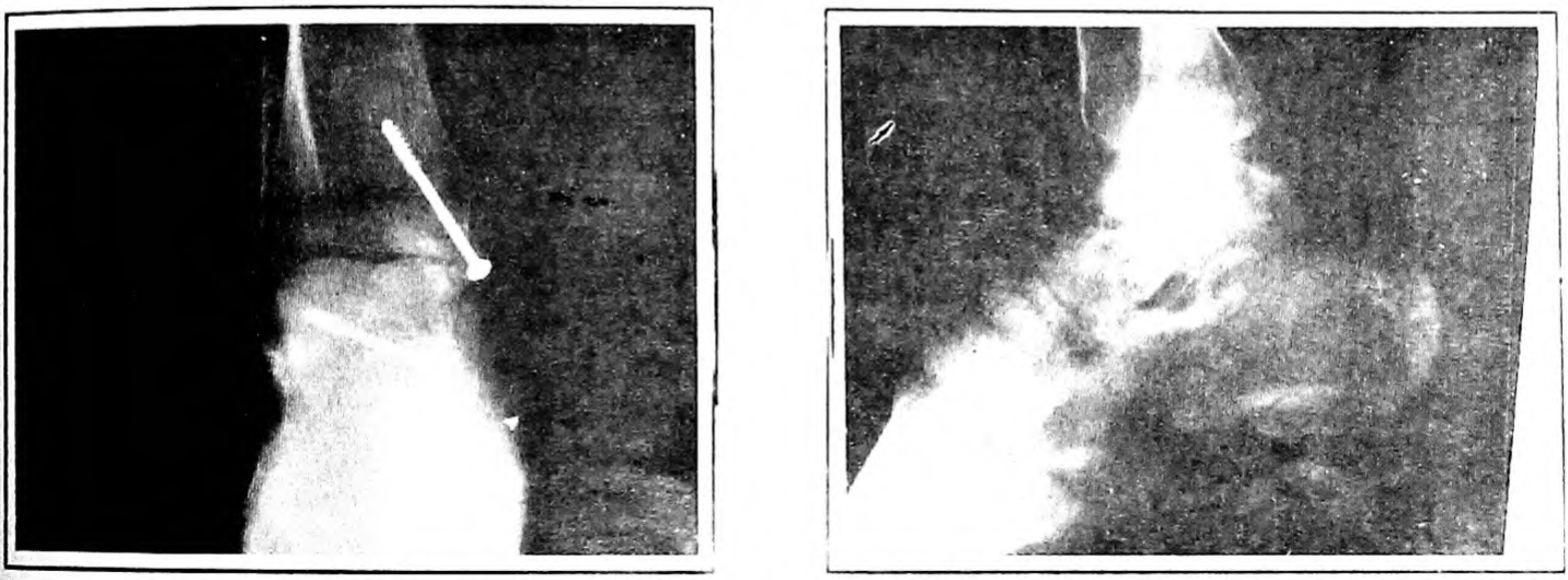

Figure 2a & 2b Radiographs showing complete union of talar facture.

tibiocalcaneal fusion, gave good results.

Dorsal beak resection of talar neck for dorsal malunion, triple arthrodesis for subtalar degenerative changes or malunion and ankle fusion for degenerative changes of ankle are beneficial procedures. Established osteomyelitis of talus is resistant to conservative treatment because it is almost entirely composed of cancellous bone and may be largely devoid of vascularity following fracture. Therefore, excision of infected bone, followed by arthrodesis, is the preferred option. We haven't come across a report of using patella as a cacellous graft in the event of an associated comminuted fracture of patella. This procedure when successful, has the advantages of 1) preserving the talus 2) maintaining the height and width of hind foot 3) normal ankle mortise and 4) good chance of functional range of movements of ankle and foot. In our case, these advantageous objectives were achieved. We concede that the risk of avascular necrosis, osteoarthritis and infection are very real and remain a part of the equation. We feel that in Hawkins's type II, III and IV fractures of talus with a gap at fracture site, primary cancellous bone grafting and fixation is a worthwhile option.

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F.U.O. A RARE CAUSE

M.A. Kamili M.D.; Nisar Ahmad Bhat M.D.; Showkat Ahmad Kadla M.D.; N.A. Masoodi M.B.B.S.

Abstract: *A right atrial myxoma (56 x 46 mm) presenting as fever of undetermined origin for 6 months, which is very uncommon, is presented.*

Key words: *Fever of undetermined origin (FUO), Myxoma*

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Introduction

Intracardic myxoma is the most common benign tumor of the heart. Approximately 86% of these tumors occur in left atrium and 90% are solitary[1]. Usually they are pedunculated and prolapse through the mitral valve during diastole. Myxomas occur most commonly (70%) in women from 30-60 years of age[2]. Rarely myxomas can occur in right atrium and less often in ventricles. Myxomas may also be familial and these patients are relatively younger with associated features like pigmented nevi. lentigens or both, adrenal disease, testicular tumours, mammary fibroadenomas acromegaly etc[2].

Patients generally present with symptoms on account of triad of manifestations constitutional, embolic and obstructive. Commonest presentation of cardiac myxoma is signs and symptoms resembling mitral valve disease, while as least presentation is signs and symtpoms of pulmonary valve disease and fever of undertermined origin 91.5% each)[3]. We report a case of young male patient who had no obvious cause for his fever for 6 months, till he proved to have right atrial myxoma.

Case Summary:

A 35 year male presented with 2 month history of fever usually in the evenings associated with malaise, fatigue and occasional night sweats. There was no significant history to account for his febrile illness. His vitals revealed pulse 104/mt regular, BP 120/80 mmHg. RR 20/mt, temperature 101°F. Rest of the physical examination and systemic examination was normal. Routine Haemogram, urine examination, kidney function tests, blood sugar, liver function tests were normal. Only ESR was raised (65 mm after Ist hour westergen method). E.C.G. showed sinus tachycardia. X-ray chest was normal. USG abdomen was inconclusive. Widal test and Brucella agglutination tests were negative. Urine culture, blood culture, bone marrow culture for septic screen and tuberculosis were negative. Bone marrow examination was normal. Patient was HIV negative. patient was advised to record temperature and follow weekly. Patient continued to be febrile persistently and was re-evaluated in a hospital again after 2 months. This time patient had mild pallor (Hb% 10gm%), pulse rate 110/mt and abdominal examination revealed palpable spleen 2Fem. Rest of the general physical and systemic examination were inconclusive. All the above investigations were repeated besides a bone biopsy from right illiac crest which was normal. Patient refused liver biopsy and was put empirically on ATT which he took for 2 months with some relief from fever. This time he was reassessed and CVS examination revealed H.R. 120/mt, S_1S_2 were normal. There was $G_2/6$ mid diastolic murmer at left lower sternal edge and a tumour plop was heard at the tricuspid area. Change of posture produced marked change in the intensity of murmer. JVP was not raised. Abdominal examination revealed splenomegaly 4 Fbcm. His ECG showed sinus tachycardia and X-ray Chest this time showed cardiomegaly with prominent right ventricular

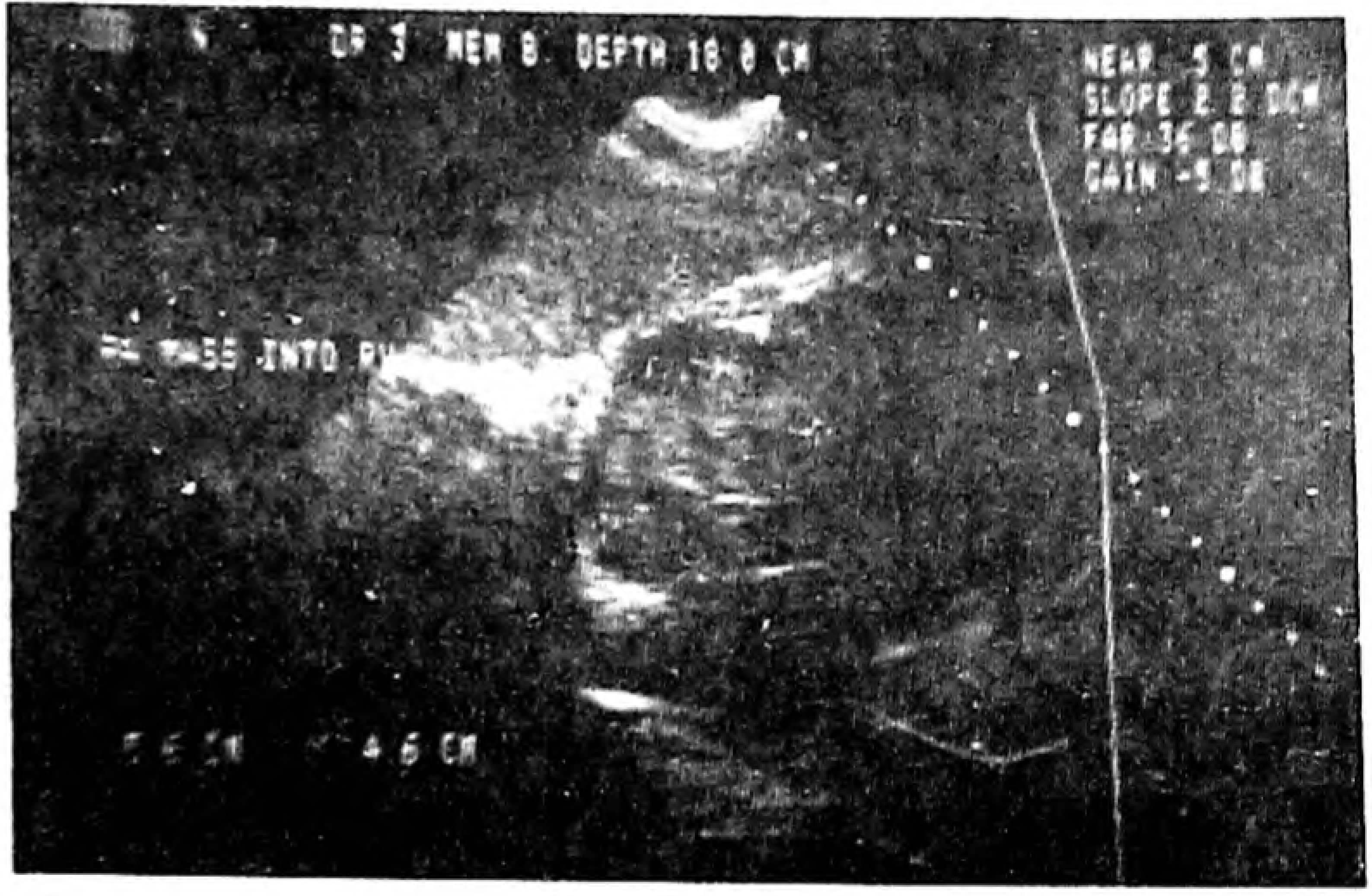

Fig. I Right atral mass (myxoma)

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and right atrial enlargement. 2-D echocardiography showed echogenic fissured mass (56x46mm) attached to Interatrial septum. It was entering the right ventricular cavity through the AV ring and occluding it completely during diastole. There was no evidence of P.A.H. A diagnosis of right atrial myxoma was made. No histological proof could be available as patient did not agree surgery till date. Family members were also screened and did not reveal any intracardiac mass.

Discussion

Right atrial myxomas are usually characterised by manifestations of systemic venous hypertension; a prominent jugular 'a' wave, hypatomegaly, ascites and edema. Patients generally present with symptoms from a triad of manifestations-constitutional, embolic and obstructive[1]. Our patient had neither obstructive symptoms nor symptoms due to embolic phenomenon, but had fever of undetermined origin and presented with fever only, which is very uncommon. Clinical presentation of cardiac myxoma reported in 130 patients is as follows[3].

◆ Signs and symptoms of mitral valve disease	57 patients.
◆ Embolic phenomenon	16
◆ Non-cardiac symptoms (incidental finding)	16
◆ Signs and symptoms of tricuspid valve disease	6
◆ Sudden unexpected death	5
◆ Pericarditis	4
◆ Myocardial infarction	3
◆ Signs and symptoms of pulmonary valve disease	2
◆ Fever of undetermined origin	2 patients

Although exertional dysponea is present in 75%, paroxysmal dyspnoea and weight loss in 25% each[2], but these symptoms were absent in our patient. Severe dizziness and syncope are seen in 20% each. Some patient (15%) present with hemoptysis and sudden death[1,3,6]. All of these symptoms were absent in our patient. A mid diastolic murmur is seen in 50% of cases. Right heart failure and pulmonary hypertension are seen in 70% of cases. Anaemia, raised ESR is seen in 33% and elevated globulins in 10% patients[2]. The average time interval from symptomatic to the correct diagnosis of Right atrial myxoma may be years[3]. Cardiac myxomas have been rarely presenting as fever of undetermined origin[3] and hence while evaluation of a case of P.U.O., a high index of suspicion should be there because it may take years to reach correct diagnosis of myxoma, however, in instant case it seems it was only a matter of 6 months. Our patient developed, change in cardiac size on x-ray chest and clinical cardiac signs after 6 months of febrile illness and 2-D echocardiography was carried out which proved to be diagnostic and demonstrated the location, origin and movement of the intracardiae mass. Although in a fever o undetermined origin of more than six months, other possiblities should be considered also which include neoplasm, stills disease. Granulomatous hepatitis, collagen vascular disease, familial Mediterrian fever, factitous fever[8]. The present case highlights the importance of 2-D echo in evaluation of fever of undtermined origin which should be carried out routinely in these casses despite absence of clinical cardiac symptoms and signs.

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SPLENIC RUPTURE OF A NORMAL SPLEEN IN A HORSE-MAN A UNIQUE TRAUMATIC ETIOLOGY

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Abstract: Traumatic or spontaneous rupture of an enlarged spleen is not an uncommon clinical entity[1,2], *while as splenic rupture of a normal spleen is an infrequent entity. We herein report a unique case, in fasct Ist of its nature, of rupture of a normal spleen which occurred in a horse rider after getting a sudden jolt while horse riding. The diagnosis was established from history, clinical examination, abdominal computarized axial tomography (CAT) and at laporotomy.*

Key words:

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Introduction

The protective effect of ribs and cushing effect of neighbouring viscera imparts resistance to spleen to resist external violence[3]. Subsequent to this protective effect traumatic or spontaneous spleenic rupture is not commonly reported in normal spleen.

Trauma is the major cause of splenic rupture, however spontaneous rupture in a pathologically enlarged spleen is not uncommon and has been reported in malaria, leukemia, typhoid, typhus fever, mumps, influenza, infections mononucleosis, carbuncle, amyloidosis and AIDS[2-5]. In these conditions the friability and high vascularity of the pulp, the brittle nature of the capsule in perisplenitis, the frequent fixation of the organ to the parietal walls and the exposure of the enalrged spleen to blows makes it vulnerable to the external trauma and subsequent rupture[1]. An early index of suspicion can be life saving in a victim of splenic rupture.

Case Report

45 year old Horseman (Markban by occupation) was referred to the department of Gastroenterology with severe left upper quadrant pain radiating to left scapular region. Historically patient has been in apparent good health one week before he developed symptoms. One week back he had got a severe jolt, while riding his house on bumpy roads in a forest where he had gone to collect the wood. At the time of jolt, patient had some discomfort and pain in the left upper quadrant but despite that he continued to labour. On admission aprt from agonising pleuritic type of pain in left upper quadrant of abdomen and left shoulder, the physical and systemic examination of chest and cardiovascular system were normal. His pulse was 92/mt with a blood pressure of 110/80 mmHg. Abdominal examination revealed mild left upper quadrant tenderness. There was no splenomegaly or fluid in peritoneum. Investigations revealed Hb: 9 gms/dl with blood counts showing TLC: 5,000/Cmm. (Normal 4000-11,000/Cmm), platelets 2.5 lacs (normal = 1 lac - 4.5 lacs). Coagulation parameters showed normal bleeding and clotting time and a normal prothrombin time index (PTI = 90%). Liver function tests, kidney function tests, ECG and X-ray chest showed no abnormality. Abdominal ultrasonography showed a heterogenous area of mixed echopattern measuring 5.6x.1 cms in relation with spleen. Abdominal CAT scan showed splenomegaly with subcapsular haematoma and small areas of infarction.

In view of history of trauma due to sudden jolt and considering the USG and abdominal CAT scan findings patient was taken for laporotomy. Abdomen was opened by left paramedian incision, findings of splenic rupture with subscapsular haematoma confirmed and spleen alongwith a large haematoma was removed after dissecting and ligating the pedicle and ligaments. Drain was put in splenic bed and abdomen closed in layers. After surgery patient had an uneventful postoperative period and continues to follow our department.

Discussion

Spleen is the abdominal organ most frequently injured by blunt trauma. Such injuries to the spleen represent approximately one quarter of all blunt injuries of the abdominal viscera. The spleen also is often injured by penetrating abdominal trauma and is frequently associated

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with blunt and penetrating thoraco-abdominal injuries. Iatrogenic trauma to the spleen is more common than is generally appreciated and has been reported as 26% in one of the series[6]. In most cases rupture is acute i.e. associated with immediate intra-peritoneal bleeding. In delayed rupture, days or weeks pass between injury and intra-peritoneal bleeding. Delayed rupture is thoght to be due to sudden increase in the size of sub-capsular haematoma causing rupture of splenic capsule or due to the dislodging of a previously formed peri-splenic haematoma[1].

In various abdominal surgeries, splenic vein compression leads to sudden distension of spleen resulting in sub-capsular haematomas due to multiple capsular avulsions[7]. While as sudden severe abdominal trauma localized to the splenic region hurls the spleen against the vertebral column. This is the most probable mechanism responsible for the crush injury in most of the cases of traumtic splenic rupture.

Our patient under discussion had a unique traumatic injury which he sustained while horse riding. For about a week after sustaining injury, patient continued to work although he had left upper quadrant discomfort. He was markaban (Horse-man) which is a unique profession of collecting wood from hilly forests and then selling it to people who use it for warming during chilly winters in Kashmir. Markaban often rides the horse and is prone to injuries associated with sudden shaky movements of the whole body. The mechanism described above for abdominal trauma localised to splenic region may be the most probable mechanism responsible for splenic injury in a horse-man.

We conclude that sudden jolt to the abdomen even while riding a horse can lead to splenic rupture even with a normal spleen and must be considered in the differential diagnosis of acute onset left upper quadrant pain in people dealing with horse riding and an early clinical suspicion will be life saving.

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PERFORATED TUBERCULAR APPENDIX

Satish Sharma M.S., FUICC.; R.K. Chrungoo M.S., FICS.; Kuldeep Singh M.D., DCP.;

Abstract: *Tuberculosis of the appendix accounts for a very smale number of surgically removed appendices. We report a case of a 30 year old male who presented with perforation of the tubrcular appendix - an extremely rare clinical occurance*

Key Words: *Appendix, Tuberculosis, Perforation*

JK-Practitioner 2001; 8(3): 179 - 180

Introduction

Tuberculosis is known to exist in the rarest of the rare forms. Gastrointestinal tuberculosis is common. In GIT tuberculosis 15%-20% patients have concomitant tuberculosis. Primary tuberculosis of the appendix is however a rare entity[1].

Case Report

Prem Kumar, 30 years old male patient presented with acute abdomen. He complained of sudden onset of severe abbdominal pain with palpitations and cold sweating. Abdominal examination revealed marked guarding, tenderness and rebound tenderness. Chest was normal. Patient had vague pain in the right iliac fossa twice in the past for the last two months. He did not have any fever, sweating, loss of weight but had mild loss of appetite. Haemogram showed Hb 12 gm% with a total Luecocyte count of 11000 per cum mm. Kidney function tests were normal. X-ray chest was normal and X-ray abdomen was hazy. A preoperative diagnosis of peritonitis secondary to appendicular perforation was made and emergency laparotomy was performed. There was free fluid in the peritoneal cavity. All other organs were normal except for the appendix which was perforated at the tip. It was swollen, greyish brown and partially necrotic. Appendicectomy was done. Peritoneal toilet was done with normal saline and tube drains kept which were removed after 48 hrs. Patient was put on antibiotics. Histopathological report showed tubercular involvement of appendix. M/E showed presence of granulomatous lesions depicting collection of epitheloid macrophages and Langherhans type of giant cells surrounded by lymphocytes and large areas of caseation necrosis stains for AFB were positive for TB bacilli. ATT was started. post operative recovery was satisfactory.

Discussion:

Tuberculosis of the appendix with perforation is an extremely uncommon complication of Mycobacterium tuberculosis. The mechanism of appendicular involvement in tuberculosis is not clear. Tuberculosis of appendix accounts for 0.6% of all surgically removed appendices. Out of 1000 appendices, there were only 4 cases of chronic granulomatous appendictis of which only 2 were tubercular[2]. Primary involvement could be due to contact with infected intestinal contents or haematogenous spread from a distant focus which is not clinically detectable[3]. For clinical purposes, absence of evidence of tuberculosis after thorough investigations and at laprotomy warrants a diagnosis of primary tuberculosis. Even secondary tuberculosis of the appendix is uncommon. In a study of 20 cases of ilecocaecal tuberculosis, appendix was not involved in a single case[4]. Primary tuberculosis of appendix does not have definite pattern of presentation It may present as acute appendicitis, intermittent appendicitis, sub-acute intestinal obstruction when associated with Ileocaecal region and very rarely perforated appendix leading to peritonitis.

Surgery with ATT is the treatment of choice. All surgically removed appendices should be sent for

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histopathological examination as a matter of routine. laboratory and radiological investigations are of no value in diagnosis which is always histopathological.

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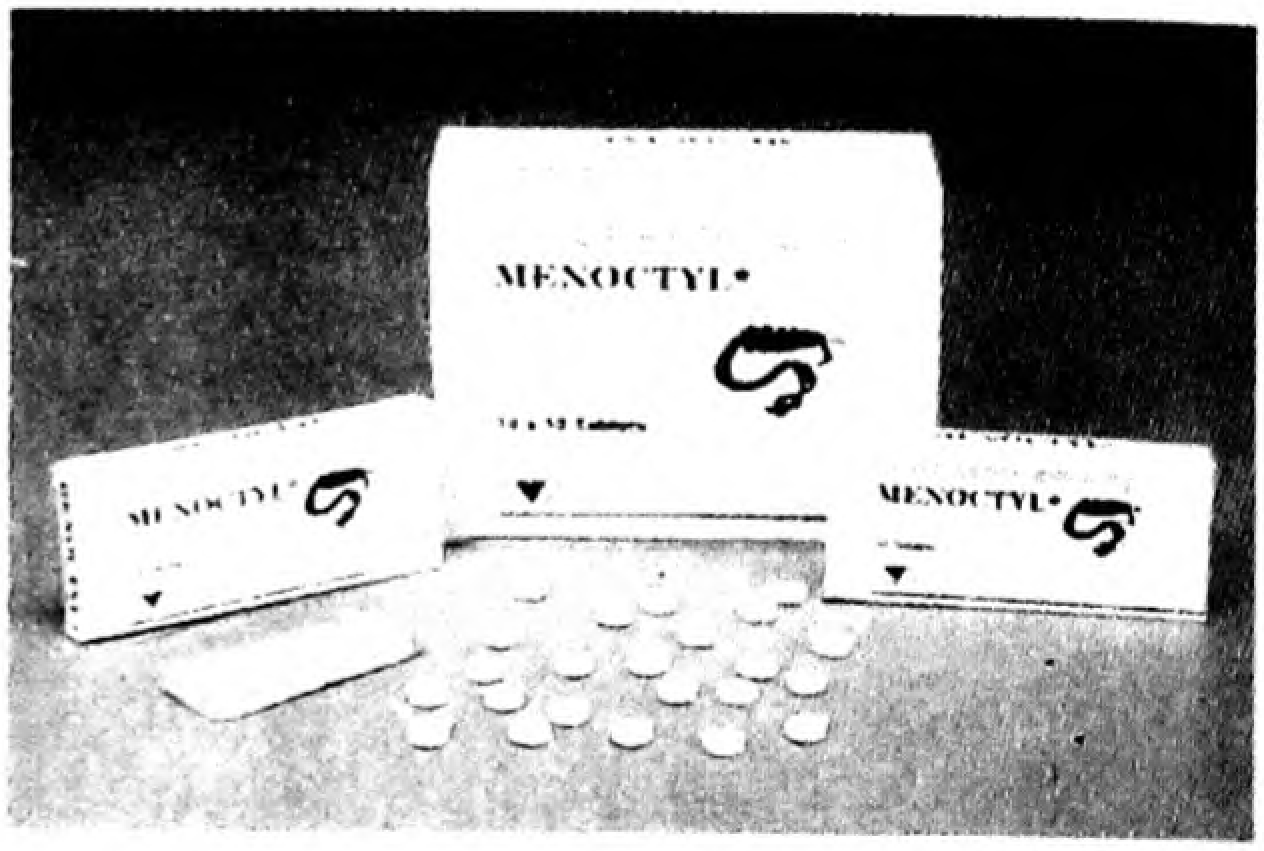

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TRANSISTIONAL CELL CARCINOMA OF BLADDER IN YOUNG PATIENTS

Imtiaz Shah MS, FICS; C.L. Gupta MS, MCH; Rahul Gupta MBBS; Sanjev Bardwaj MBBS.

Abstract: The records of two patients aged 19 years and 26 years, with transitional cell carcinoma of the bladder in low grade and low stage with excellent prognosis are presented. Both patients presented with gross painless haematuria. The two cases support the contention that transitional cell carcinoma of the bladder is a less aggressive disease in patients who are in first and second decade of life then old patients. The patients, who smoke cigarettes with deep inhalation had about twice the incidence of bladder cancer as in non smokers.

Key words: Haematuria, bladder, carcinoma, cigarette, Cystoscope.

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Introduction

Transitional cell carcinoma of bladder causes approximately 10,000 deaths in United States of America each year. Carcinoma of bladder is uncommon in first and second decade of life[1] and approximately 100 patients with transitional cell carcinoma of bladder who are more than twenty years of age have been described in world literature since 1950[2,3]. Because of the rarity of transitional cell carcinoma in young patients, many fingers are pointing towards the bio-logical potential of the tumor which still remains debatable.

Case Report No 1

19 years male patient domestic servant by occupation presented with on and off painless gross haematuria for last ten days. patients did not give any history suggestive of tuberculosis or schistosomiasis. Patient has been chronic cigarette smoker for last nine years and used to deeply inhale the smoke for a long duration. Beside anemia and few ronchi in the chest there were no other positive finding on clinical examination. Cystopanendoscopy revealed cauliflower growth at the base of bladder involving trigone and left lateral wall, about 2cm x 1.5cm. Besides haemoglobin of 9.8 gms% all haematological investigations including renal parameters were withinn normal limits. Urine microscopy reveled full field RBC and transabdominal ultra sonography revealed a growth at the base of bladder, extending to the left lateral wall, sparing both uretric orifices. Upper tracts were normal with no prevesical infiltration. Few cuts of C T scan with intra vesical contrast confirmed the findings of ultrasound. Patient was diagnosed as bladder mass and under regional anesthesia (epidural) complete transurethral resection of the bladder mass was achieved using 24F resectoscope with few deep biopsies from different areas of bladder. Histopathalogical examination of the specimen confirmed Transitional Cell Carcinoma moderately differentiated with no infiltration to laminapropria.

Case No. 2

26 years unmarried male patient labourer by occupation presented with gross painless haematuria for last five days, besides being chronic smoker there was no other positive history which could be a clue to the haematuria. Clincially there was no pallor or any palpable mass in the abdomen or pelvis. Routine haematological investigations revealed Hb 10.6gm% with total, differential count and renal parameters were within normal limits, urine microscopy revealed fill field RBC. Ultrasound of the bladder showed mass on the right latral wall with no back pressure changes in the upper tracts with no perivesical breach. Cystoscopy confirmed sessile growth on the right lateral wall above right uretric orifice. Complete resection of the growth was done and histopathological examination of the specimen confirmed Transitional Cell Carcinoma grade 1 with no muscle involvement.

Discussion

Epithelial bladder carcinoma is unusual in young patients, during a vast experience in clinical practice at a referral center we have come across only two carcinoma

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bladder in young patients till date.

The presentation of bladder carcinoma in young patients did not differ from the usual clincial manifestation of the disease. Both patients presented with gross painless haematuia marked with male predominance with high incidence of tobacco smoking among the patients[3,4]. There was a delay in getting clinical assistance probably because of reluctance to evaluate aggressively gross haematuria in young patients, as presenting symptoms were attributed to severe urinary infection or to stones. None of our patients had history of exposure to bladder carcinogens therefore despite its usual occurrence epithelial tumours of the bladder must be considered in the differential diagnosis of haematuria in patients who are in second or third decade of life. Usualy the tumour is diagnosed at cystoscopy and urinary cytological studies have not been a useful diagnostic tool[5] principal reason being that bladder tumor in this age group as of low grade.

Transitional Cell Carcinoma in association with schistosomaisis has been found with five year boy and Benton and Herdison have implicated several environmental factors are potentially carcinogenic in young male subjects but we could not indicate any potentially carcinogenic predisposing condition in our patient other than chronic smoking habits with deep inhalation.

Literature is unclear regarding the natural history of transitional cell carcinoma of bladder in young patients. Some authors have reported that a young individual bladder carcinoma behaves in a benign fashion[4] others reported that the young patient differ from old patients should not be influenced by age of patients but the grade and the stage of the tumor[5]. Our two cases likely to have favorable prognosis appears due to low grade and low stage of the tumor. Although 5% recurrence rates have been published in literature having low grade tumor. A number of contrast studies have shown smokers at high risk two to three times than non smokers with consumption of cigarette and degree of inhalation[3], as seen in our cases who used to inhale the smoke for a long time.

Periodic cystopanendoscopy examination used to be similar as seen in older patients for re-evaluating the epithelial tumors post operatively. To conclude that the prognosis of Transitional Cell Carcinoma of bladder in young patients does not depend upon the age but the grade and the stage of tumor at presentation and expertise of resectionist.

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PILOMATRIXOMA - AN UNCOMMON SKIN LESION

Shah Azra, Baba Khalil Mohammad

Abstract: *Pilomatrixomas are histologically distinctive and essentially benign skin lesion uncommonly encountered. Six cases are reported from the Department of Pathology, Sher-i-Kashmir Institute of Medical Sciences, Soura, Srinagar over a period of ten years. There were four males and two females, with age group ranging between 8 and 30 years.*

The sites of origin were head and neck (3 cases), upper extremity (2 cases) and gluteal region (1 case). The diagnosis was made on histopathological examination.

Key words: *Pilomatrixoma, calcifying epithelioma, pilomatrix carcinoma.*

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Introduction:

Pilomatrixomas are histologically distinctive uncommonly encountered hard lesions arising within the dermis of children and young adults[1]. These lesions simulate clinically a wide range of skin lesions. This entity was originally described by Malherbe and Chenautais[2] in 1880 as a benign calcifying tumour arising from the sebaceous glands. The term Pilomatrixoma was coined by Forbes and Helwig[3]. Turhan and Krainer[1] in 1942 recognized that the tumour cells differentiated in the direction of cells of the hair matrix. More recently this finding was confirmed by electron microscopic studies and histochemistry[5]. Most of the cases occur in the head, neck and upper extremities[3]. The lesions present as quiescent, firm to hard, sharply demarcated and encapsulated swellings one to several centimetres in diameter and covered by normal skin. The diagnosis is made only by histopathological examinations.

We herein report six cases of pilomatrixoma seen over a period of ten years in the department of Pathology, Sher-i-Kashmir Institute of Medical Sciences, Soura, Srinagar.

Case Reports

Case I:

A 20 year old male presented with a 1x1 cm left sided neck swelling of one years duration. It was hard, non-tender and slightly mobile, clinically mistaken for a calcified lymph node.

Case 2:

An 8 year old male child had a gradually increasing swelling on the right forearm of two months duration. The swelling measured 2x1 cm. An X-ray of the forearm showed a soft tissue shadow with focal calcification. The clinical diagnosis was? calcified sebaccons cyst,? cysticercosis.

Case 3:

A 12 year female presented with a painless swelling on the right forearm for the last six months. The swelling measured 3x2 cm, was hard and mobile.

Case 4:

A 10 years old male child had a gradually increasing painless swelling of the right parotid region of six months duration. Clinically a diagnosis of a parotid tumour was made.

Case 5:

A 30 year old female presented with swelling of the left gluteal region of 2 years duration. The swelling was hard, non-tender, 3.5x1.5 cm, mobile.

Case 6:

25 years old male presented with left sided neck swelling 2x2cm which was clinically diagnosed as a collar stud abscess.

Gross Pathology:

All six excision biopsies were received in the department. The specimens were nodular, circumscribed, soft tissue masses varying in size from 1x1 cm to 3.5x2.5

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cm. The cut surface was gritty and cheesy with multiple, scattered greyis-white specks.

Microscopy:

The tumours were well-circumscribed and partially encapsulated. They showed typical morphology consisting of a mixture of proliferating basophilic basaloid cells and masses of *"ghost" or "shadow"* cells. Foreign body gaint cell reaction was seen in all six cases. Irregular coarse calcification was seen in three cases and diffuse areas of fine calcification in the remaining three cases. None of the cases showed ossification or chondrification. The stroma was fibrous in 4 and hyaline in 2 cases respectively.

Discussion

Few cases of pilomatrixomas have been reported from India. Most of the published cases from India are single case report[5,6,7,8]. This is an uncommon tumour occuring mainly in children and young adults as was seen in all our cases. Two-third of our cases occured in males. Some studies have reported it to be more common in females[9]. The common locations are the head, neck and upper extremities which was also confirmed by us. We did not come across multiple pilomatrixomas as has been reported elsewhere[3].

Histologically the lesion is characterized by proliferating basaloid cells with numerous mitosis Ghost cells are derived from the basaloid cells. Secondary events are foreign body reaction, calcification and ossification which occur as a response to the hair matrix during passage of time[10]. Calcification is a common feature which was seen in all our cases.

The tumour though usually benign may in some cases recur after excision and rarely undergoes metastasis[11,12].

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CASE REPORT

JK-PRACTITIONER

[illegible] ARTERY [illegible] CONTRACEPTIVES

Bashir Ahmad [illegible] M.S.

[illegible] oral contraceptives [illegible] (Mala-D) for six months only.

Key words : Retina, Oral Contraceptives

JK-Practitioner 2001; 8(3): 185-186

[illegible] disorders of the retina [illegible] ophthalmologist [illegible] because of their [illegible] effect on vision [illegible] systemic [illegible] life threatening [illegible]

Case Report

[illegible] one day duration [illegible] left eye [illegible] normal. The left [illegible] calcium [illegible] neoplastic emboli.

[illegible] polyarteritis [illegible] lupus erythematosus, giant cell arteritis [illegible] takayasu [illegible] tuberculosis and syphilitic arteritis [illegible] intra-ocular pressure [illegible] glaucoma, retinal detachment [illegible] orbital floor fracture [illegible] increased blood viscosity [illegible] leukemia, polycythemia [illegible] dysproteinaemias.

[illegible] Oral contraceptives (OC) [illegible] increased blood [illegible] migraine [illegible] she did not improve her vision. A detailed history for suggestive cause of occlusion revealed that she had been on oral contraceptives for 6 months.

A thorough systemic examintion revealed no abnormality. She was not hypertensive or diabetic. THe blood examination revealed normal haemogram, platelet count, coagulogram, lipid profile and protein analysis.

LE cell and ANA were negative, ECG and chest X-rays revealed no abnormality.

Discussion:-

This 21 year old female with CRAO revealed no clinical, biochemical or radiological evidence of cardiovascular, haematological, collagen vascular or neoplastic disease. However, the patient had been on oral contraceptives for 6 months. Females on OC'S are prone to thromboebolic pheonomenon, more common in the venous than in the arterial system. This has been linked to the concentration of the estrogen component in the pill. A dose of 50ugm of ethinyl estrodiol seems to be the safe upper limit beyond which the risk increases[3].

CRAO resulting from long term use of OCS have been reported in literature[4-6] and is more common in the older age group. This 21 year old patient was on Mala-D, which has an ethinyl estradiol concentration of 0.03 mgs, for only 6 months. A case of cilioretinal artery occlusion in a 17 year old female who was on orthonovum (noresthindlone 0.05 mgs with mestranol) for 8 month has been reported[7] and a case of CRAO in 19 year old female who was also on Mala-D for a period of 4 months has also been reported[3].

Treatment aims to restore the retinal circulation as quickly as possible by decreasing embolisation. Although retinal tissues cannot survive ischemia for more than a few hours, complete occlusion is rare. It is therefore reasonable to treat all cases seen within 4-8 hours.

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ANAESTHETIC CONSIDERATIONS FOR BRONCHOSCOPY IN CHILDREN FOR FOREIGN BODY REMOVAL

Javid Manzoor M.D.

Abstract: *Foreign body inhalation is common in young children and is a life threatening accident. Early removal by bronchoscopy is needed to relieve the distressing symptoms and to prevent further complications. Anaesthetic management of such cases is always difficult and poses special problems for the anaesthetist. A case of a 19 month old girl with inhaled foreign body is reported here and anaesthetic considerations discussed.*

Key words: *Airways, Foreign Body, Rigid-bronchoscope, Respiratory distress.*

JK-Practitioner 2001; 8(3): 187 - 189

Case Report

One 19 month old girl was admitted on ENT side in SMHS Hospital Srinagar in emergency under MRD No. 655467 on 10-12-1996 at 8 p.m. with severe respiratory distress. The parents narrated that the child was alright four hours back when they suddenly noticed her to struggle for her breath.

On examination, the child had a heart rate of 130 beats per minute and respiratory rate of 56/min, exhausted and using all her accessary muscles for breathing. There was no cyanosis. Haemoglobin level was 12 mg% and blood counts were normal. Chest X-ray did not reveal any foreign body shadow but on auscultation of chest, breathsounds on left side were diminished. The child was subjected to immediate bronchoscopy with a strong suspicion of foreign body inhalation.

Intravenous line was established with Dextrose 5% in water. Atropine 0.2 mg and Hydrocortisone 50 mgs were administered I/V. The heart was monitored with the aid of pericordial stethoscope. Child was oxygenated with 100% oxygen by face mask for 5 minutes. Anaesthesia was induced with 1.5% halothane in oxygen using a modified T-piece system. When adequate level was achieved, the ENT surgeon was allowed to proceed. After introduction of the rigid bronchoscope into the trachea, the patient was connected to the anaesthesia machine through Mapelson - A circuit via the side-arm adapter. Anaesthesia was maintained with Nitrous Oxide in Oxygen (50:50) and halothane 0.5%. Ventilation was assisted after administration of suxamethonium 5 mg I/V.

As the ENT surgeon proceeded with his work, he was able to retrieve two small pieces of broken "Kidney bean" (Rajmash) from the left main bronchus. An incremental dose of succinylcholine, 3 mg was given I/V before introducing the bronchoscope for the third and final look and ventilation assisted. After satisfying himself that nothing was left behind in either of the bronchi and trachea, he took out the bronchoscope. This whole process took about 8 minutes. The oropharynx was immediately suctioned clear of secretions and the child was given 100% oxygen by face mask till spontaneous breathing was fully established. But there was no satisfactory improvement in the respiratory in the status of the patient. She continued to be in distress, using all her accessary muscles of respiration with features of respiratory obstruction.

In an attempt to inflate the lungs with oxygen, I intubated the patient with 4.0 mm I.D. plan red rubber endotracheal tube. While my assistant was still reassembling the connections, I gave a breath through the tube to expand the lungs. To my surpise, on the return breath from the patient, I received in my mouth the third piece of the foreign body through the endotracheal tube. It measured 3.0 x 3.0 mms. Patient was allowed to breathe 100% oxygen for 3 minutes and then the tube was removed after proper suctioning of the Oropharynx. She was now breathing normally. After full recovery of consciousness, she was shifted to her ward.

Discussion:

Foreign body inhalation most commonly occurs in small children of 1-3 years of age who often explore small objects and lack molars for grinding food particles[1,2] It is a life threatening condition and early diagnosis and bronchoscopic removal will save the patient from serious complications and even death[3,4]. The majority of inhaled objects are organic foods such as seeds, nuts, bones, peas

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etc. and smaller number are plastic or metal, usually pieces of toys[1,2,5,6]. Vegetables foreign bodies like peas and beans are especially notorious if retained for a period of time as they cause mucosal irritation, oedema and greater incidence of pneumonia distal to the bronchial obstruction[7]. A single aspirated pea or bean can swell and soften and can be easily fragmented when grasped by forceps[8]. This particular characteristic of fragmentation can casue death during the course of removal when the divided pieces occlude each mainstream bronchus and totally prevent ventilation[8,9].

Foreign body inhalation should always be suspected in a previously normal child who is brought with choking or gagging followed by cough, stridor, breathlessness and occasionally cyanosis. Air entry may be diminished on the affected side or there may be wheezing[2,5]. Child may be aphonic due to laryngeal obstruction or may have even respiratory distress[7]. X-ray findings are not always conclusive as most of the vegetable foreign bodies are radiolucent. 86% of children have normal chest X-ray in the first 24 hours[1].

Anaesthetic management of these cases is always difficult due to poor general condition of the patient and the competition for the airway between the anaesthetist and the endoscopist. Severe respiratory and cardiovascular embarrassment of even cardiac arrest may follow tracheobronchial manipulation and suction. This has been attributed to a combination of hypoxia and reflex vagal stimulation[1]. Repeated suctioning during bronchoscopy also induces atelectasis[10]. Hypoxia aggravates vagal responses and increases the incidenceof cardiac arrythmias[1]. Avoidance of these hazards during bronchoscopy under general anaesthesia demands the optimum in skills, communication and team work between the endoscopist and the anaesthesiologist[9].

Rigid ventilating bronchoscope is available in different sizes and is mainly used for removal of foreign bodies while as the fiberoptic one is mainly of diagnostic value[11]. Foreign body removal with the aid of rigid brochoscope is successful in 95-98 percent of time, although a small number may need repeated brochoscopies either because it was removed incompletely due to fragmentation or was not found previously[9,12]. It is therefore important to select an anaesthetic technique which is reasonably safe for the patient and provides ideal conditions for the endoscopist to look for and remove every piece of foreign body. Anything left behind can lead to persistence of symptoms and further complications.

The production of the third piece of foreign body in this case through endotracheal tube was accomplished by a mechanism similar to cough reflex. Raising the intrapulmonary pressure by blowing into the tube and then releasing it suddenly made the foreign body to propel out through the tube into the anaesthetists mouth during expiration. Early recovery of cough reflex is therefore vital in the immediate post operative period and the anaesthetic agents which can delay the same should be either avoided or used very cautiously. Premedication with sedatives and opiates should not be given to any child with partially obstructed airway. Atropin is necessary to reduce secretions and for prevention of bradycardia or dysrhythmia so often seen with laryngeal and bronchial stimulation.

Bronchoscopy can be done under deep Halothane anaesthesia and topical local anaesthetics to the larynx and trachea in older children and adults. It is advisable to prevent spontaneous ventilatory effort particularly in patients with partially obstructing inhaled foreign bodies[9]. Adequate oxygenation of lungs should be ensured during the procedure besides maintaining anaesthesia. Instrumentation of larynx and trachea can provoke laryngeal and bronchospasm and this can be treated or prevented by very small doses of suxamethonium (0.1 mg/kg)[13]. Such small doses have little effect on spontaneous ventilatory effort and don't cause bradycardia or fasciculations and give a relaxation period lasting 2 minutes during which time the depth of anaesthesia can be increased by assisting ventilation[13].

After induction of anaesthesia with halothane in oxygen, intermitent small doses of suxamethonium (0.1 - 0.5 mg/kg) prevent laryngeal spasm and makes introduction and removal of rigid bronchoscope through the immobile cords easy. The side arm makes it possible to fit the ventilating bronchoscope to any anaesthetic system in order to maintain anaesthesia, oxygenation and assisted or controlled ventilation[9]. Intermittently with the co-operation of the endoscopist, the tip of the bronchoscope can be brought to a level above carina and both lungs effectively ventilated[1]. Also some times the size of the foreign body may exceed the internal diameter of the bronchoscope so that it together with the forceps and cope must be removed as a single unit through the immobile cords[14], and this process may have to be repeated several times in case of fragmented foreign bodies. Small intermittent doses of suxamethonium can facilitate this and also allows to prolong the procedure as per the need.

It is therefore suggested that an anaesthetic technique planned should predict the expected problems in that particular patient and must provide optimum conditions for endoscopist for better results. Adequate ventilation is necessary to prevent hypoxia and hypercarbia. Early recovery of protective reflexes is always advantageous. Child should be kept in lateral position till conscious and should be closely watched for any persistance of symptoms. Chances of residual foreign matter should always be borne in mind espeically in the case of vegetable foreign bodies. Trauma of the airways during bronchoscopy may produce mucosal irritation and oedema. This should be treated with steroids, humidified oxygen and bronchodilators. Repeated endoscopies in small children may result in subglottic oedema and may necessitate endotracheal intubation or tracheostomy[1,11].

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IODINE DEFICIENCY DISORDER

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Iodine deficiency is a risk factor for growth and development of an estimated 800 million people living in Iodine deficient-environment throughout world. The effects on growth and development called iodine deficiency disorder (IDD) comprise goitre, still birth, miscarriage, neonatal and juvenile thyroid deficiency, dwarfism, mental defects, deaf mutism & spastic wearkness and paralysis, as well as lesser degrees of physical and mental function. All these effects are due to inadequate thyroid harmone production because iodine is an essential constituent of thyroid harmone.

Ancient civilization

One of the oldest refrences to goitre is attributed to the legendary chinese Shen Nung Emperor who mentioned the sea weed Sargasso as an effective remedy for goitre. Goitre was also mentioned in the book from the period 770-220 BC Shan Khai Tsing (A treatise on water & day lands) which attributed the disease to poor quality of water. Chinese even used animal thyroid along with sea weeds. The use of deer thyroid was mentioned in the book by Shen Shi Fan (AD420-501). The continued use of animal thyroid and sea weeds over hundreds of years suggested that there was certainly some benefit derived by these measures in the treatment of goitre.

The oldest known representation of goitre in Buddha frieze of Gandhara now in Pakistan (2nd/3rd century AD). The Frieze Shows Buddha beset on all sides with animal and human being who seek to disturb his meditation. Among these figures is a man with a large goitre. He is carrying a drum which the man behind him is beating with a crook. His facial expression suggests idiocy and he is deaf because of close proximity of drum to his ears. Father of Medicine Hippocrates regarded poor drinking water as a cause of goitre as revealed in his famous volume Air, Water & Places.

Iodine although a trace element, spectrum of disorder caused by its deficiency is wide as well as complex. Iodine deficiency effects all ages but it is the child population which is effected most because the age <15 yrs.. is the age of rapid mental and physical development. Iodine deficiency is world's single most significant cause of preventable brain damage. It is caused by ecological and enviromental factors. It is geochemical in nature.

Goitre has ceased to be a major problem in many developed countries (although not eradicated). It continue to be a serious health problem in many third world countries e.g. it is of considerable magnitude in India and neighbouring countries of Bangladesh, Bhutan, Burma, Indonesia, Nepal, Sri Lanka and Thailand. Levels of severity are higher in South East Asia than any where else in wrold.

Problem - Global

Surveys conducted by various nations of world suggest that the total number of population at risk of IDD exceeds 1.5 billion in other words 29% world population is effected by this micronutrient deficiency.

220 Million Suffer from goitre

6 Million contribute to cretins

20 Million suffer from mild neurological disorders.

Asia: Alone more than 200 million people are effected. 46 million are incurable because of brain damage, 500 million are at risk, robbing millions of people of the right to normal life. Its wide spread prevalence leaves tragic effects - Mental, physical abnormalities, deaf mutism, goitre, dwarfism, retarded, physical and psychomotor development in child.

India: It has always been thought that goitre and cretinism were only found to a significant extent in Himalyan goitre belt. It stretches from Kashmir to Naga hills in east about 2400 km. effecting northern states of Jammu & Kashmir, Himachal Predash, Punjab, Haryana, Delhi, UP, Bihar, West Bengal, Sikkim, Asam Arunachal Pradash, Nagaland, Mesoram, Meghalaya, Tripura and Manipur.

Recent survays in India indicate that no state or union territory is free from iodine deficiency.

Iodine deficiency is the commonest preventable cause of mental retardation in world. Realizing seriousness of problem Govt. of Madhya Pradesh constituted Rajiv Gandhi Technology mission of elimination of IDD with the goal of eliminating IDD from state by 1997 - strategy adopted was universalization of iodenated salt use in state with active and continued community participation.

In last 50 years many countries in North America,

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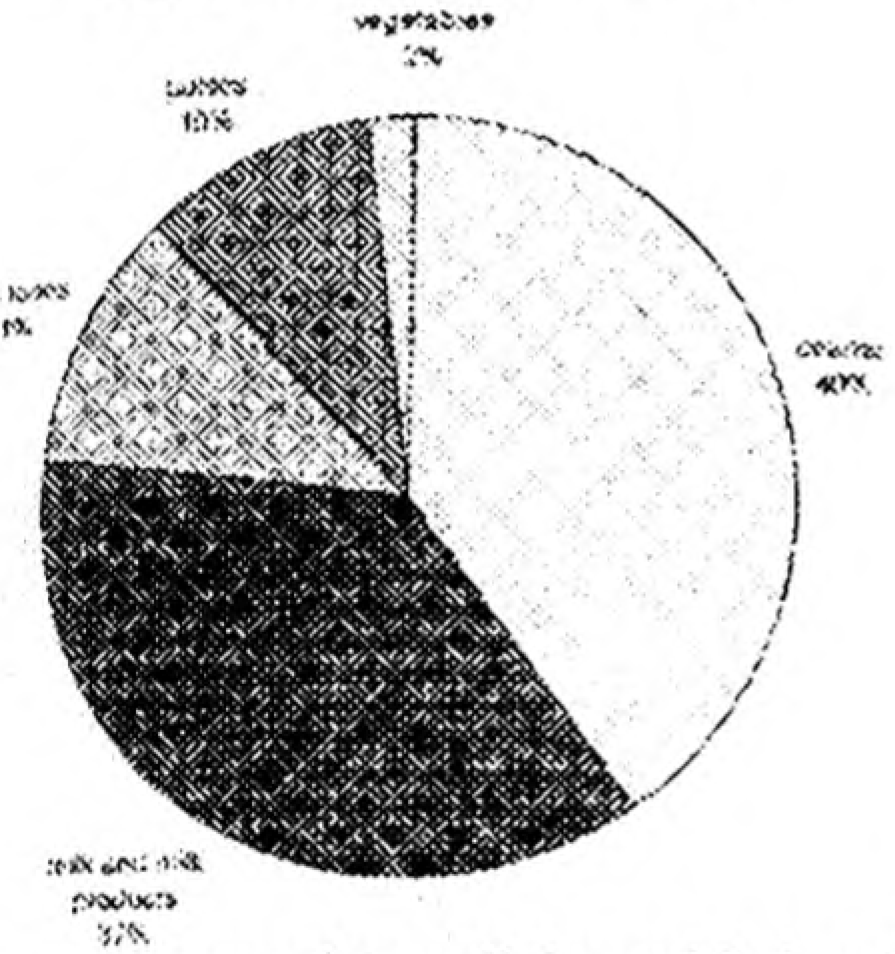
Asia, Europe, Occania have successfully eliminated IDD. In Switzerland salt iodization started in 1920. Cretinism remains eliminated and goitre has disappeared.

Normal healthy thyroid gland of an adult human contains 8-12 mg of iodine. This amount can be reduced to 1 mg or less in endamic goitre.

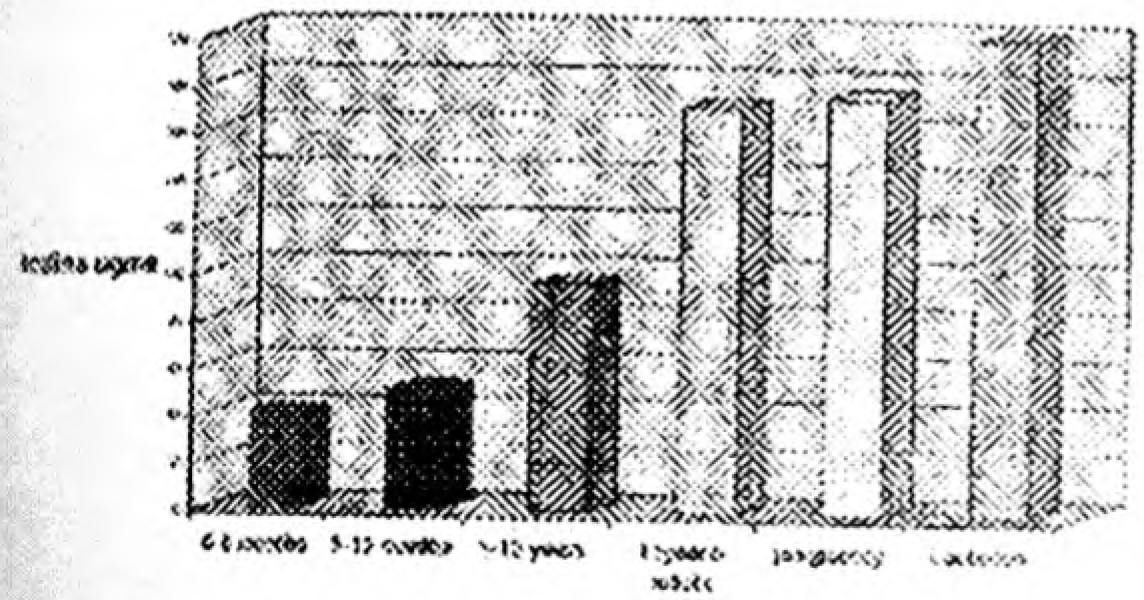
Iodine present in human body in small amounts, 15-20 mg, 70-80% of total body iodine is concentrated in thyroglobin (an iodenated glycoprotein) of thyorid gland. Iodine is required for synthesis of thyroid harmone T3 and T4 which are iodenated molecules of essential amino acid. Tyrosine thyroid harmone regulates wide variety of physiological process in body tissue.

Content of Iodine in Foods



These harmones regulate cellular oxidation. T4 & T3 are necessary for brain development protein synthesis and they promote nitrogen retention, grycogenolysis, intestinal absorption of glucose and galactose lipolysis and up take of glucose by adepocytes. Its defeciency results in irreversible brain damage in foetus, infant and retarded psychomotor development in child.

Recomanded dietry intake of Iodine



Daily requirement is very small, 100-150 ug/day accounting to a one more TSF for life time. Daily consumption of 10-15 gm of salt gives 225 ug of iodine.

Humans and animals are critically dependent on external supply of relatively small but adequate amount of iodine through food and water which inturn is dependent on iodine content of soil. Over the millennium the iodine in surface soil in some parts of world has been progressively leached out by glaciation at mountaineous areas, snow, rain and repeated flooding - iodine is carried in to sea. The ecological profile of Indian subcontenent with its hilly and mountaineous terrain and frequent floods makes it vulnerable to low iodine content of its soil and thus low nutritional iodine intake by its habitants.

Iodine content of common Indian foods

National Institute of Nutrition has carried out a systemic study based on iodine content common foods which show wide variation.

Drinking water goitrous area Non goiterous area
3-16 ug/litre 5-64 ug/lit

Fish 28 - 55 ug/100 gm on sea coasts 175 ug/100g

Egg - 50 ug/100 gm. concentrated more in white portion.

Millet Sorgham - >73 ug/100gm

Mustand oil seeds - 55 ug/100gm.

Fruits and vegetables are found to be poor sources. Foods grown in iodine deficient soil have very low level of iodine as compared to non goiterous iodine. In India National goitre control programme was started in 1960's. The National deficiency disorder control programme (NIDDCP) is a new name to this programme. One of the goals set by National Nutrition policy was the elimination of IDD by 2000.

Issues relating to USI (universal salt iodization) have been carefully examined by WHO, FAO, UNICEF experts groups. All concerned agree that USI is principal public health measure for elimination of IDD.

Content of Iodine in Common Foods

Food	*Iodine Content*
Cereals	40%
Milk and Milk Products	37%
Flesh Foods	11%
Pulses	10%
Vegetables	2%
Drinking water	
i) Goitrous areas	3-16 ugms./ltr.
ii) Non-Goitrous areas	5-64 ugms/100gms.
Egg	50 ugms/100gms.
Sorghum	>73 ugms/100gms.
Mustered Oil seeds	55 ugms/100gms

The concept of USI implies iodization of salt for all people at all times.

Food & Nutrition board of National Academy of Sciences USA estimated that a daily intake of 1000 mcg is safe. Average daily intake of iodine in Japan is reported to be 3000 mcg which is 20 times more than RDA value in India. Generally accepted desirable adult intake is 100-

300 ug/day. In pregnancy and lactation requirement is more.

Recently reports from developed countries like USA, Australia indicate reemergence of IDD because iodine intake is coming down. Iodine deficiency during pregnancy, even in mider from may lead to neurological deficit in children born to those women.

Salt industry have been mobilized resulting in increased production of iodized salt from 200,000 tonnes in 1983- 40 lakh tones in 1998.

All states with the exception of Kerala has issued notification prohibiting the sale of salt other than iodized salt. India is making significant advancement in elimination of iodine deficiency. Over 80% of population has access to adequate iodized salt in India. India and other developing countries are at the brink of eliminating iodine defeciency. Over 110 countries in world have compulsory USI (Universal Salt Iodization).

This is a matter of deep concern that a statement on behalf of Prime Minister of India has appeared in Newspapers recently that compulsory iodization of salt is going to be stopped - an important sociomedical decision. At this stage to stop USI will be a national disaster.

There is a mistaken notion that iodization has led to increased in price of iodized salt. Cost of iodization / person/ year is less than the price of a cup of tea only 50 paisa / person / year. Major cost is on transport and packing. Cost of iodine for per kg of salt is 3-5 paise.

The statement concerned a press note issued by Ministery of Health and Family Welfare dated 11 May 2000.

The operative part of which says the central Govt. has issued a preliminary notification proposing a future withdrawal of compulsory iodization of edible salt. It is a anti public health measure, iodine being an essential nutrient for human survival and development.

Director General of WHO Dr. Gro Hartena Brundt Land land addressing world health Assembly last year said - when elimination of IDD is achieved it will be a major and total public health triumph ranking with small pox & poliomyletis.

Prime Minister of India look an informed and historic decision in 1984 to universally iodenate all edible salt in India by 1990 giving highest priority to hyperendamic areas.

When you eat iodized salt daily you prevent these disorders which are invisible and irreversible - Brain damage, developmental disorders, high frequency of cretinism, mental retardation and deaf mutism.

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PROTOCOLS FOR NUTRITION SUPPORT OF NEURO SURGICAL PATIENTS IN THE INTENSIVE CARE UNIT

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Neurologically impaired patients often require non-oral nutrition support because of intubation, altered mental status or dysphagia. Common diagnoses of patients admitted to a neuro intensive care unit (NICU) include traumatic head injury, stroke, brain tumor, spinal cord injury, degenerative disease (multiple sclerosis, amyotrophic lateral sclerosis, Alzheimer's, Parkinson's) or a mobility disorder (myasthenia gravis, Guillain-Barre syndrome). All of these conditions have the potential to promote visceral protein depletion and wasting of skeletal musculature through dysmobility, inadequate oral intake or hypercatabolism secondary to the disease process. Even non-surgical patients may be in a hypermetabolic, hypercatabolic state due to the nature of their disease and the invasive interventions required to support them during treatment and recovery[1].

Early nutrition support through the enteral route has been shown to blunt catabolism, reduce complications and reduce length of stay in a number of patient populations, including both surgical and non-surgical neuro patients[2,3]. However, nutrition support must be initiated within the 48+ to 72+ hour period immediately following injury or surgical insult to achieve these benefits[2]. Clinicians are often hesitant to feed critically ill neuro patients too soon. However, studies indicate patients with severe neurological deficits and clinically silent abdomens can tolerate low-rate jejunal feedings within 36 hours of injury[4] with a gradual increase in feeding rate to meet initial caloric goals within two to four days[4,5] if jejunal feedings are initiated prior to induction of pentobarbital infusion, even patients in pentobarbital coma can be fed enterally[6].

Several protocols have been proposed to ensure a uniformity in the method of provision of nutrition to the neurosurgical patients in the ICU.

PROTOCOLS

I. Determine most appropriate route of feeding on admission and obtain access[7].

Access routes are listed in order of cost/benefit analysis.

a. Oral: for patients who are extubated, awake/alert, following commands AND have intact swallowing ability and adequate GI function

b. Enteral: for patients who are intubated, unable to swallow OR eat adequate PLUS have adequate small bowel function

c. Parenteral, central: for patients who have inadequate small bowel function OR on whom all forms of enteral access or support are contraindicated AND who have central venous access

d. Parenteral, peripheral: for patients who have inadequate small bowel function OR on whom all forms of access are contraindicated PLUS on whom central venous access is contraindicated

II. Assess the patient's nutritional status and nutrient requirements[8].

a. Assess energy reserve based on pre-resuscitation weight

1. Calculate Ideal Body Weight (IBW) by *Hamwi method*

Males: 106 pounds for the first 5 feet plus 6 pounds for each inch above 5 feet

Females: 100 pounds for the first 5 feet plus 5 pounds for each inch above 5 feet

2. Obtain admission weight and usual weight as a percentage of IBW

- 200% IBW: morbidly obese
- 126 - 199% IBW: obese
- 111 - 125% IBW: overweight
- 90 - 110% IBW: adequate energy reserve
- 80 - 89% IBW: lean body habitus or mildly depleted energy stores
- 70 - 79% IBW: moderate depletion of energy reserve
- < 69% IBW: severe depletion of energy reserve

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B. Assess visceral protein stores.

Note that these parameters are unreliable if creatinine clearance is under 50 ml/minute or if patient is in fulminant renal or hepatic failure. Serum albumin is invalid as an indicator of protein nutrition after fluid resuscitation has been initiated and acute stress response has occurred. Laboratory values may differ slightly by institution and assay used

1. Adequate stores:
Albumin 3.5 - 5.0 mg/dl
Transferrin 212 - 360 mg/dl
Prealbumin 18 - 45 mg/dl.

2. Mildly depleted stores:
Albumin 2.8 - 3.4 mg/dl
Transferrin 150 - 211 mg/dl
Prealbumin 15 - 17 mg/dl

3. Moderately depleted stores:
Albumin 2.1 - 2.7 mg/dl
Transferrin 100 - 149 mg/dl
Prealbumin 11 - 14 mg/dl

4. Severely depleted stores:
Albumin < 2.1 mg/dl
Transferrin < 100 mg/dl
Prealbumin < 10 mg/dl

C. Assess nitrogen balance.

Reliable only when creatinine clearance is stable and above 50 ml/minute.

1. Method

Obtain 24 hour timed urine urea nitrogen in grams/ 24hours. Divide by 0.85 to correct for non-urea urine nitrogen losses. Add 2 to 4 grams for correct for insensible nitrogen losses . Multiply by 6.25 to determine protein intake required for equilibrium .

2. Interpretation:

Compare result to patient's protein intake from all sources: oral, enteral and parenteral
Intake > output: "positive" = anabolism exceeds catabolism
Intake < output: "negative" = catabolism exceeds anabolism
Intake = output: "zero" = in equilibrium between catabolism and anabolism

3. Goal:

To achieve a positive to zero nitrogen balance.
May not be feasible in severely hypercatabolic patients for several weeks

D. Calculate macronutrient and fluid requirements

1. Fluid requirements
a. By weight: 25 - 35 ml/kg depending on age, sex, activity
b. By calorie intake: 1 ml/kcal
c. Limit in CHF, edema, oliguria, hyponatremia, SIADH
d. Increase if abnormal gastrointestinal, skin or renal fluid losses
e. Consider all sources, intravenous, enteral and oral

2. Caloric requirements
a. Per kg: 25 - 35 kcal/kg IBW
b. Harris-Benedict prediction equation x injury factor

Male: BEE (Basal Energy Expenditure) = 66.47 + (13.75 x weight in kg) + (5.0 x height in cm) (6.76 x age in years)

Female: BEE (Basal Energy Expenditure) = 655.1 + (9.56 x weight in kg) + (1.85 x height in cm) - (4.68 x age in years)

Injury factors:

minor surgery w/o complications -BEE X 1.1
infection, major surgery w/o comp-BEE X 1.2
fracture -BEE x 1.35
20% TBSA (Total Body Surface Area) burn, multiple fractures BEE x 1.5
sepsis, MSOF (Multiple System Organ Failure), ARDS, CHI (Closed Head Injury) BEE x 1.6 - 1.8
burns > 20% TBSA BEE x 1.8 - 2.0

c. REE (Resting Energy Expenditure) and RQ (Respiratory Quotient) by metabolic gas analysis[9]. Not reliable if FIO_2 > 50%, PEEP > 10, variable V_E/ VO_2/VCO_2/RQ Not useful if standard deviation of REE > 15%

3. Protein requirements[10]
a. Per kg: 1.2 - 2.5 grams/kg in critical illness/injury or for repletion
b. As percent of total kcal: 15 - 25%
c. As calorie: nitrogen ratio: 100 - 150:1
d. In renal failure:
  no metabolic stress, no dialysis —0.6 - 0.8 g/kg/d
  metabolic stress, no dialysis —0.8 - 1.0 g/kg/d
  hemodialysis —1.2 - 1.4 g/kg/d
  peritoneal dialysis—1.2 - 1.5 g/kg/d
  CVVH/CAVHD—1.5 - 1.8 g/kg/d
e. Protein contains 4 calories/gram.

4. **Lipid requirements**[10]
   a. Minimum 10% kcal as fat to prevent essential fatty acid deficiency
   b. Maximum 60% total kcal or 2 grams/kg
   c. Give < 30% kcal or < 1 g/kg to minimize immunosuppression
   d. Reduce dose if TG > 300
   e. Increase lipid and decrease carbohydrate if hyperglycemic or insulin-resistant
   f. Intralipid solutions: 20% contains 2 kcal/cc, 10% contains 1.1 Kcal/cc (propofol is 10% intralipid-based)
   g. Fat contains 9 calories per gram

5. **Carbohydrate requirements**[10]
   a. To provide remaining non-protein kcal
   b. Dextrose: 3.4 kcal/gram
   c. Sucrose: 4 kcal/gram

6. **Consequences of overfeeding:** life-threatening fluid and electrolyte shifts (refeeding syndrome), azotemia, hypertonic dehydration, metabolic acidosis, hypercapnia, hyperglycemia, hyperlipidemia, hepatic steatosis[11,12].

III. Begin feeding through the chosen access route as soon as patient is hemodynamically stable and oxygenating well.

Benefits of early nutrition support as described in the literature occur when feedings are initiated within 48 to 72 hours following injury or surgical insult[2]. Feeding a hemodynamically unstable patient may lead to undesirable complications, most notably bowel infarction in enterally fed patients.

IV. Protocol, oral diet patients

A. Start regular diet if positive bowel sounds OR clear liquid diet if decreased bowel sounds, advancing to a regular diet as tolerated
B. Start nutritional supplements (i.e., Ensure Plus)
C. Monitor oral intake via I & O's
D. Monitor weight daily
E. Monitor bowel function daily, start bowel protocol
F. Monitor Prealbumin levels weekly
G. If weight loss, prealbumin < 18, or intake < 50% trays, start supplemental tube feedings

V. Protocol, enterally-fed patients[7,13]

Note: Bowel sounds are an unreliable indicator of small bowel function. Patients with altered GI function may be fed with elemental solutions via the small bowel in most instances. Continuous small bowel feedings are associated with a lower incidence of feeding-induced GI dysfunction and a higher incidence of achieving and maintaining feeding goals in the ICU setting than with gastric or bolus feedings[14].

A. Start bowel protocol with daily low-dose bisacodyl and docusate sodium, giving prn fleet's enemas if no BM after first dose of bisacodyl or if no bowel movement x 3 days
B. If enteral support anticipated for 6 weeks or more, consult Procedure Team for PEG/J placement
C. If enteral support anticipated for less than 6 weeks, manually place nasoduodenal or nasojejunal feeding tube, giving metoclopramide 10 mg IV x 1 prior to tube insertion
D. Obtain KUB after placement of feeding tube
E. If KUB indicates tip of nasoenteric tube to be in the stomach, reposition until tip is past the pylorus and repeat KUB. If unable to manually place tube post-pylorically after 2 attempts, consult Procedure Team for NJT placement
   Start tube feedings at 15 - 30 cc/hour when tube placement confirmed

1. Osmolite HN: polymeric, 1 calorie/cc, moderate protein/electrolytes/fat
2. Promote: polymeric, 1 calorie/cc, high protein/potassium/phosphate
3. TwoCal HN: polymeric, 2 calorie/cc, for simple fluid restriction
4. Nepro: polymeric, 2 calorie/cc, restricted fluid in protein, fluid and electrolytes, high fat, moderate carbohydrate, for hemodialysis patients
5. Vivonex Plus: elemental, 1 calorie/cc, moderate protein, low fat

F. Advance tube feedings by 15 - 20 cc every 4 - 12 hours until at goal rate

H. If diarrhea present[15]

   1. Obtain C. Diff toxin & fecal leukocytes
   2. Start lactobacillus acidophilus tx (cultured yogurt, Lactinex granules)
   3. Start anti-diarrheal agent if C. Diff negative
   4. Review enteral medications for potential to promote diarrhea
   5. Calculate stool osmotic gap = stool osmolality - 2(stool Na+ + stool K+)
      Large gap: osmotic diarrhea
      Small or negative gap: secretory diarrhea

6. Consider altering fat/fiber/nutrient density of enteral formula if large gap

I. Obtain speech pathology consult for swallowing evaluation once patient is extubated, awake and alert and following commands, to rule out dysphagia

J. When patient is no longer critical and demonstrates normal gastric emptying with or without the use of pharmacologic intervention, transition onto intermittent feedings every 4 to 6 hours to provide same daily volume of formula as continuous feedings

K. When patient passes swallowing evaluation by speech therapist:

1. give supplemental tube feedings at night (continuous drip) or after meals (bolus) to provide 50% calorie/protein needs
2. advance diet with nutritional supplements as per dietitian/speech path notes
3. have nursing staff assist patient with all meals and supplements
4. monitor oral intake via I & O's
5. adjust tube feedings per p.o. intake
    a. place pt. back on 24 tube feedings if p.o. intake < 70%, declining prealbumin or weight loss
    b. D/C night time tube feedings when p.o. intake > 70%, normal prealbumin and weight stable

L. If patient is unable to tolerate enteral support or achieve/maintain adequate goal rate, start TPN or PPN

VI. Protocol for parenterally fed patients, central access[10]

a. Obtain central venous access with clean port dedicated to TPN

b. Start TPN to provide 100% calorie/protein/micronutrient needs

1. Standard TPN: 50 grams protein, 850 non-protein kcal/liter
2. Non-standard TPN: for diabetics, insulin-resistance, renal or hepatic dysfunction, refeeding syndrome risk, fluid restriction, electrolyte abnormalities

C. Start low rate enteral feedings or oral diet as soon as medically feasible to preserve normal GI function, reducing TPN as enteral feeds advanced

VII. Protocol for parenterally fed patients, peripheral access[7,10]

a. Assess appropriateness of peripheral parenteral support and patient's ability to tolerate it

1. Serum triglycerides < 200
2. Good peripheral access
3. Able to tolerate 3 liters intravenous fluid volume daily
4. All forms of enteral and central venous access contraindicated

If patient meets all 4 criteria, start peripheral nutrition to provide > 75% calorie/protein needs

If patient does not meet all 4 criteria, start support via central line or reconsider enteral feedings

b. Peripheral parenteral nutrition solutions limited to

1. < 10% amino acid solution
2. < 20% initial / 12.5% final dextrose concentration
3. < 2 grams lipid/kg/day, not to exceed 60% of total kcal
4. Minimize additives to reduce osmolality. Vitamins, insulin, H2 blockers and standard electrolytes can generally be added to solution if no other access route is available

C. Start oral/enteral feedings as soon as feasible to maintain normal GI function

VIII. Monitor the patient and adjust nutrition support as indicated[8,10,11,12,13]

A. Q Shift:

1. GI function. Watch for emesis, cramping, distention, tenderness, abdominal pain, diarrhea, constipation, increased gastric output. Lower rate or stop feedings depending on severity, supplement with parenteral nutrition support if needed, and investigate etiology
2. Intake and Outputs
3. Finger Stick Blood Glucose every 4 hr.

B. Daily:

1. Chem 7
2. Weight
3. Appropriateness of current access route (i.e., oral vs. enteral, DHT vs. NJT vs. PEG/J, peripheral vs. central venous parenteral access)
4. Readiness of patient to progress from parenteral to enteral to oral feedings

C. Twice a week:

1. Ionized calcium
2. Serum phosphorus
3. Serum magnesium
4. Liver function tests and bilirubin
5. Serum triglycerides

D. Weekly (if creatinine clearance is stable and above 50 ml/minute):

1. Timed 24 hour urine urea nitrogen
2. Serum prealbumin and transferrin

E. As indicated:

Metabolic gas analysis

IX. Parenteral Electrolyte Requirements

	Sheldon et al (16)	Grant (17)	Schlictig & Ayers (18)
Potassium	120-160mMol/d	80-100mEq/d	70-100mEq/d
Sodium	125 - 150 mMol/d	80-100mEq/d	70-100 mEq/d
Phosphorus	15-25 mMol/1000 kcal	7-10 mMol/1000 kcal	20-30 mMol/d
Magnesium	7.5-10 mMol/day	0.25-0.35 mEq/kg/d	15-20 mEq/d
Calcium	n/a	0.2-0.3 mEq/kg/d	10-20 mMol/d
Chloride/ Acetate	n/a	Equal to sodium to prevent acid-base disturbances	n/a

Potassium and sodium are available as phosphorus or chloride, or as acetate, a bicarbonate precursor. Calcium is available as gluconate or chloride. Magnesium is available as sulfate.

X. Parenteral Electrolyte and Vitamin Requirements in Acute or Chronic renal Failure(19).

Electrolytes		Vitamins	
Sodium	35-70 mEq/liter	Thiamin	2-5 mg/dau
Potassium	30mEq/liter	Riboflavin	1-25 mg/day
Chloride	35-70 mEq/liter	Niacin	10-40 mg/day
Calcium	10mEq/liter	Pantothenic Acid	10-40 mg/day
Magnesium	10mEq/liter	Pridoxine	2.5-10 mg/day
Phosphorus	5-10 mEq/liter	Ascorbic	1.5-10 mg/day
	3-8 MMol/Liter	Folic Acid	50-100 mg/day
		B_{12}	0.4-1 mg/day
		K	3-4 ug/day
		E	4 mg/week
		A, trace minerals	4mg/week
			10IU/day Add if TPN used >3 weeks or as sole source of nutrition

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PSEUDO ASCITES

[illegible]

home

[illegible]

ESR - 40 mm. 1st hr.

Ascitic fluid analysis

Color - milky,

WBC +++, DLC - polys. 100%

Cytology TLC-9000, DLC - [illegible]

[illegible] Cholesterol - [illegible]

Sudan Staining -ve

No Malignant cells

[illegible]

Hydatid Serology [illegible] 20 (+ve)

were drained along with numerous daughter cysts. Lamellated membrane was removed completely. Post-operatively patient was put on Albendazole 400mg BID for 4 weeks and repeated for several cycle with 1 month drug free interval in between cycles.

Discussion

Hydatid disease is a paracytic infection, which is caused by several species of cestode echinococcus - E. granurosus accounts for majority of cases. E. multilocularis causes locally invasive multilocular alveolar lesions. E. vogeli causes polycystic hydatid disease.

Infection with E. Granulosus is worldwide but is endemic in sheep growing countries - Australia, Newzealand, South America. It is also prevalent enough in India especially in Punjab, Andhra Pradesh & Madras.

Most children get infected due to close contact with dogs but consumption of raw or uncooked food soiled with dog feces plays an important role in transmission of disease. Embryos after escaping from eggs in human intestinal lumen, penetrate mucosa, enter hepatic portal system & are carried to various organs via general circulation. Almost any part of body is affected but most commonly involved sites are liver & lung. Larvae develop into cysts, which consist of external membrane and inner germinal layer. Daughter cysts and germinating cystic structures called Brood Capsules develop from inner germinal layer. Hydatid fluid is sterile and highly allergic one. But in our case it was containing high number of Leucocytes with predominance of neutrophils. The fluid was infected prossibly by prior paracentesis where fluid analysis was not done.

Aim of publishing this case report is that the hydatidosis in this patient was very rare one which (omental hydatidosis) has been reported in various literatures as having incidence of 1%[1]. This hydatidosis was also an unusual one- the extreperitorieal hydatidosis which has been described as 'antivisceral' and 'pseudo-ascites'. The most likely explanation for this bizarre condition is that a secondarily ruptured liver cyst continues to exporiate a separate portion of peritoneal cavity for disposal of its contents. An inflammatory response around this prticular portion augments its isolation from rest of abdominal cavity.

Majid A, M.D.; Shahzada M.B.B.S.; Ishtiyaz M.S.; G.M. Malik M.D., FACG; H. Tajamul M.D.; Samia Rashid M.D.; Mir Nazir M.S.; A. Nissar M.S. ***From the Department of Medicine** (Majid, Shahzada, Malik, Tajamul, Samia) **and Surgery** (Ishtiyaq, Nazir, Nissar) **SMHS Hospital, Govt. Medical College Srinagar Kashmir, India.***
JK-Practitioner 2001; 8(3): 198-199

Further Reading

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ERRATA

Please read this illustration with the article,

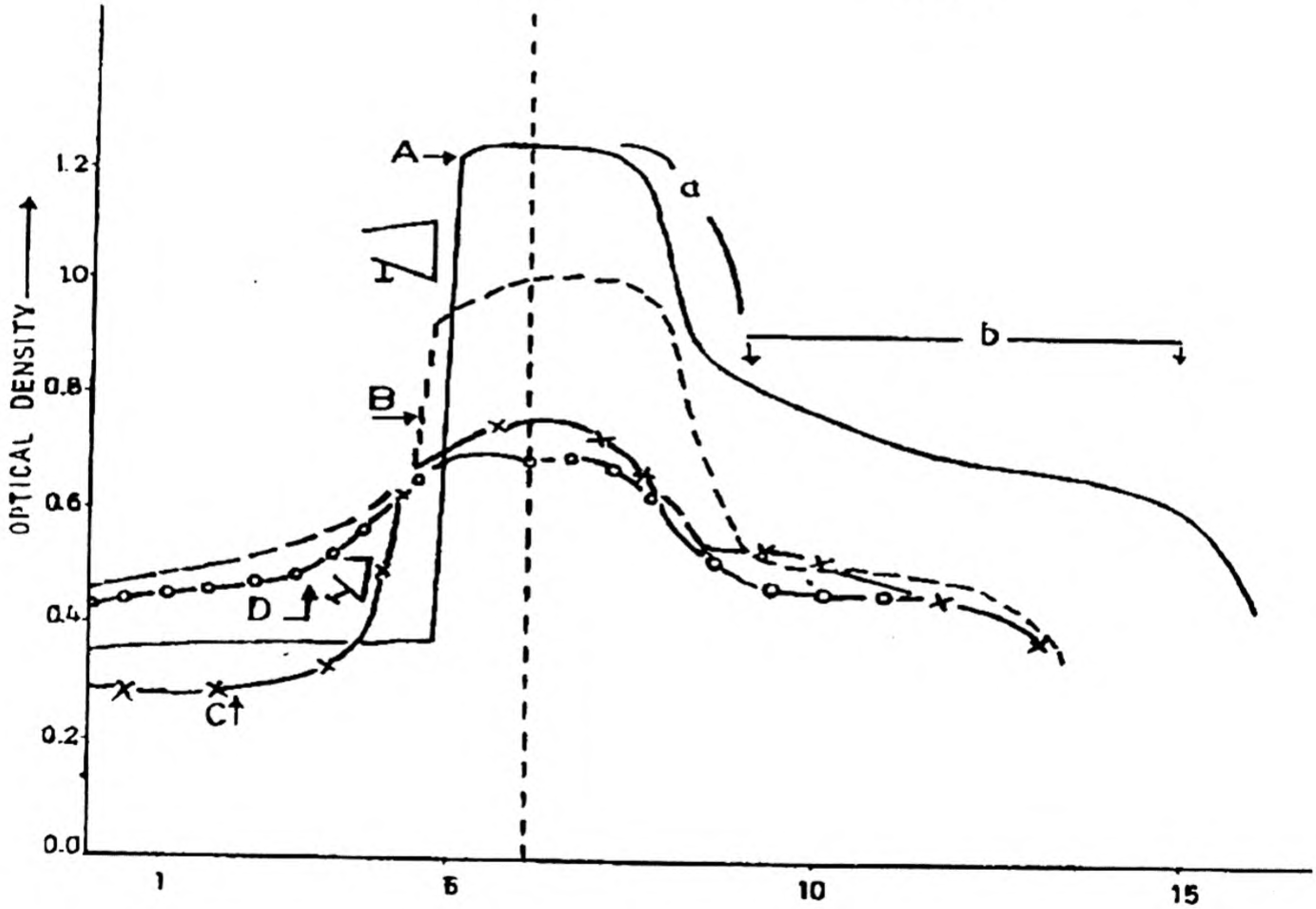
Andrabi W.H.; Kharadi M.Y.; Koul S.K.; Abbas S.M.; & Bhat M. Ayub.

Use of Breast Treatment Trimmer (B.T.T.) in Tangential fields in radiotherapy.

JK-Practitioner 2001; 8(2):.90-92

Fig.I

SCALE
0.D, 10 div=0.1
Seg.No = 10 div = 1.0 cm.
= B.T.T.



Segment No.——— (cm)

A - with B.T.T. at 80 cm.	**B - Without B.T.T. at 80 cm.**
C - with B.T.T. at 95 cm.	**D - without B.T.T. at 95 cm.**

NATURAL HISTORY OF HEPATITIS C VIRUS INFECTION - RISK FACTORS FOR DISEASE PROGRESSION

S.K. Sarin; D. Kapoor

Infection with hepatitis C virus (HCV) causes acute and chronic hepatitis with attending sequelae of cirrhosis and primary hepatocellular carcinoma (HCC). Approximately 4 million people in the US and probably more than 100 million people worldwide are infected with this virus[1]. According to the estimates from the Centres for Disease Control and Prevention (CDC), of the 1.8% Americans infected with this agent, about 10,000 succumb to the consequences of this infection every year[2]. While the natural history of hepatitis C has been extensively studied, it still remains unclear how the disease will progress in a given individual. Patients who clear the virus after an acute infection constitute a small percentage of those who get infected with hepatitis C. Those who go on to the chronic course rarely manifest features of chronic hepatitis and often may insidiously progress to cirrhosis and ultimately HCC. It is however not known whether the sequelae of chronic hepatitis C are inevitable in every person infected with this agent and whether there is a linear or a predictable course to any of these events[3]. To make matters more complex, a subset of patient remain apparently 'stable' even in the stages of chronic hepatitis and cirrhosis - they are asymptomatic, have persistently normal aminotransferases, and in the former category, even a mildly abnormal liver histology[4] (Fig.1). Thus, it has been exceedingly difficult to accurately define outcomes in patients infected with HCV.

From an epidemiologist's standpoint, the requirements of an ideal natural history study of HCV infection have not been possible because of several limitations:

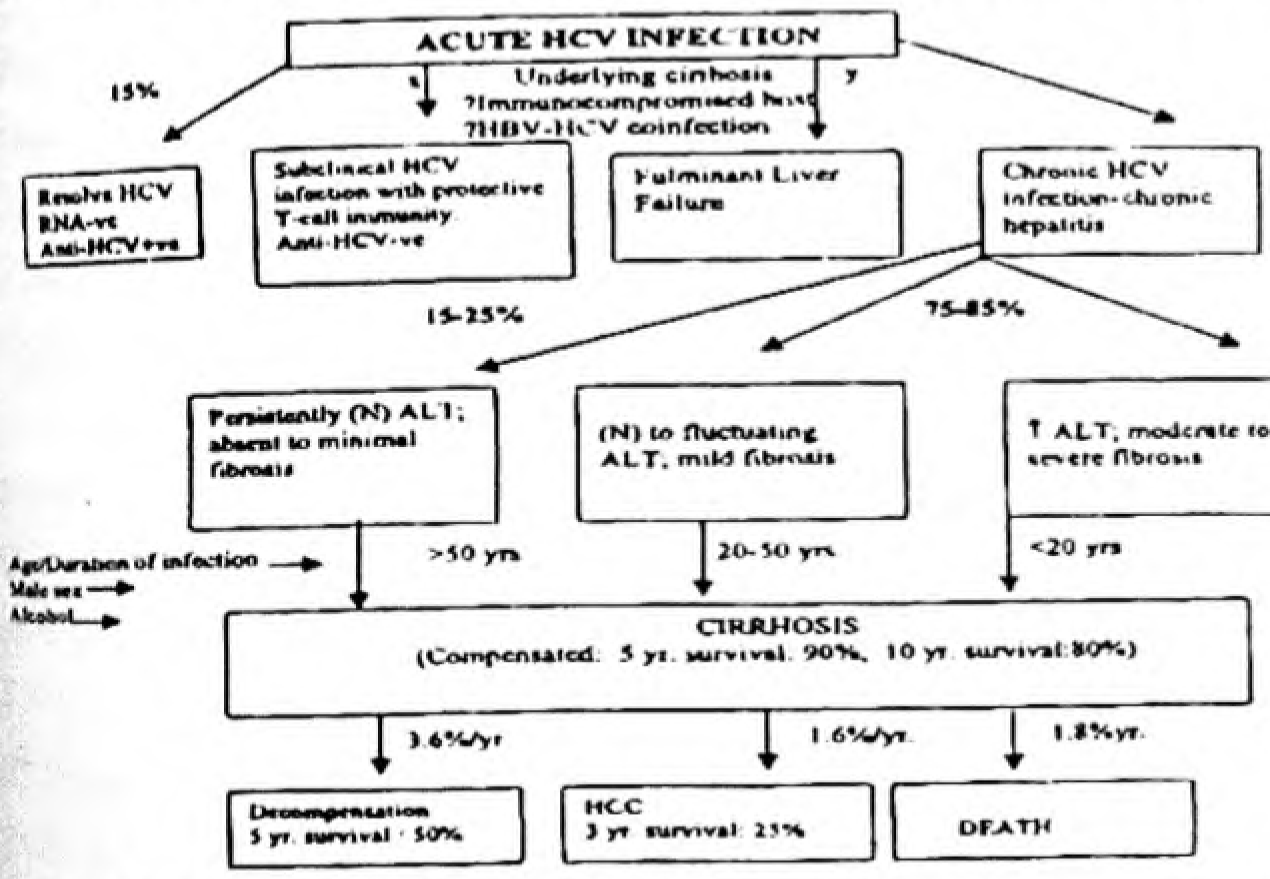

ACUTE HCV INFECTION
15%
x
Underlying cirrhosis
?Immunocompromised host
?HBV-HCV coinfection
y
Resolve HCV
RNA-ve
Anti-HCV+ve
Subclinical HCV
infection with protective
T-cell immunity
Anti-HCV-ve
Fulminant Liver
Failure
Chronic HCV
infection-chronic
hepatitis
15-25%
75-85%
Persistently (N) ALT;
absent to minimal
fibrosis
(N) to fluctuating
ALT, mild fibrosis
↑ ALT; moderate to
severe fibrosis
Age/Duration of infection
Male sex
Alcohol
>50 yrs
20-50 yrs
<20 yrs
CIRRHOSIS
(Compensated: 5 yr. survival: 90%, 10 yr. survival:80%)
3.6%/yr
1.6%/yr.
1.8%yr.
Decompensation
5 yr. survival : 50%
HCC
3 yr. survival: 25%
DEATH

Figure 1 Natural history of HCV infection 'x' and 'y' represent poorly defined outcomes. Arrows represent synergistic factors.

- The precise time to onset of infection is often unknown and inference regarding duration of infection is drawn from an event such as blood transfusion, surgery, intravenous drug abuse (IVDA), etc.
- The acute infection is symptomatic in less than 20% of cases; patients are, therefore, missed at this stage, thus preventing a complete assessment of this cohort.
- Thos who harbor the infection chronically are also quite often asymptomatic, making it difficult to determine the full spectrum of chronic illness.
- Parallel studies on a 'control group' of subjects not infected with HCV have been woefully few in numbers. This is because the acute onset of illness can often not be defined. This is far more important as the disease course is greatly modified by 'non-agent factors' such as age, sex of host, alcohol abuse or IVDA.
- Lack of data from controlled studies on the clinical outcome of the infection treated vis-a-vis untreated patients. In the former group too, the fate of the disease may largely be governed by success or failure of therapy. At the present time, it might be unethical to conduct natural history studies on patients denied treatement, as new and more effective therapies get added to the armamentarium against this agent.

To circumvent some of these problems, investigators have tried to come up with mathematical models or statistical projections to define the magnitude of the problem in a given patient or a community. Deuffic et al. tried to devise a model based on 'back calculation' to predict the outcome of chronic HCV infection in France[5]. They project that the HCC related mortality (predominantlydue to HCV) will continue to rise through 2020 in the absence of successful therapy, leading to a 150% increase in the yearly incidence among men and 200% among women. In spite of the apparent 'fit' of their calculations with known epidemiological data on the course of chronic infection, there are certain flaws in their projections, the most important being that they have considered only age and sex as the main variables determining the progression from stage of chronic hepatitis to cirrhosis. This underscores the fact that no matter how

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Reproducedwith Permission of the Author Prof. S.K. Sarin, Head Department of Gastroenterology GB Pant Hospital New Delhi, India. The Article is being Published in two parts. The second Part will appear in the next issue).

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careful the attempt, the study of a disease whose course is governed by so many variables is not going to be easy.

As is evident from Figure 1, the possible outcomes after infection with HCV can be conveniently categorized into:

i) Subclincal HCV infection with protective immunity;
ii) Outcomes after acute hepatitis C (AHC);
iii) Outcomes after chronic hepatitis C (CHC);
iv) Outcomes after liver cirrhosis (LC).

The reason for classifying these events as above is to draw meaningful conclusions from different studies which have taken patients at any of these stages as the cohort and then tried to define their course. In most of these categories, one can draw upon studies which have prospectively, retrospectively or retrospectively-prospectively followed the patients over a period of time. These study prototypes deserve special mention as these are the studies with the largest sample size and in which a cohort of subjects or patients who had experienced a well defined clinical event in the past are traced from specific registries and then tracked many years or decades later to ascertain how they ae faring.

Subclinical HCV infection with protective T-cell immunity

A group of individuals who are repeatedly exposed to HCV infection, possibly in small doses, may have self-limited clinically covert infections. These subjects are seronegative (i.e. do not produce any anti-HCV antibodies in spite of normal immune status) and yet their T-cells (especially CD 8 cells) are able to mount a vigrous cytotoxic T lymphocyte (CTL)response against multiple HCV epitopes in vitro[6]. These individuals are generally the family contracts of patients with apparent or inapparent chronic HCV infection. The awareness regarding this group is increasing and study of these subjects may help elucidate mechanisms of viral clearance better in the future. The long-term outcome of these subjects is currently unknown.

Outcomes after acute hepatitis C (AHC)

Most studies which have dealt with the problem of AHC have drawn upon patients from three main groups: transfusion recipients, intravenous drug abusers and sporadic cases. The data show that most of these patients have subclinical infection[7]. The incubation period may vary according to the mode of transmission and is higher for post-transfusion (5-12 weeks) than for nosocomial non-A, non-B hepatitis (NANBH) (-4 weeks) and NANBH in recipients of coagulation factors (-1 week)[7]. The hepatitic illness in those who become symptomatic is milder than that seen with the other causes of acute hepatitis, with peak serum bilirubin and ALT levels generally remaining lower than 12 mg/dl and 600 IU/L. The progression to chronic course may also depend on the intitial mode of transmission, being lower for sporadic NANBH (~30-40%) than post-transfusion NANBH (60-70%)[8] (Table 1).

Table-1: Progression of acute NANBH to chronicity based on mode of transmission

Mode of transmission	Acute HCV	Chronic HCV (%)
Blood Transfusion	21	14(67)
VDA	20	18(60)
Occupational exposure	5	3 (60)
Sexual / household contact	6	5(83)
Low socio-economic status	28	17(61)
None	7	3(43)
Total	97	60(62)

Data modified from Ref. 8

Chronic HCV based on ALT>ULN at least 9 months after acute infection.

The pattern of ALT abnormalities after AHC may show one of the following features:

- recurrent elevations interspersed with normal or near normal values (which may occur over weeks or months).
- Monophasic rapid increase to peak ALT followed by rapid decline to normal, only to increase after months or years.
- Moderate increase in ALT which plateaus off at that or slightly lower level.

None of these patterns can determine whether or not a patient would progress to the stageof chronicity[8,9].

The course of acute (post-transfusion) hepatitis C, with respect to viral clearance was studied by Tremolada in a group of 117 patients. These workers showed that HCV RNA is cleared from the serum in 15% of cases while 85% of the cases remain viraemic - 12% with normalized ALT ad 73% with raised/fluctuating ALT[10].

The course of acute hepatitis C with respect to histological progression and well defined clinical outcomes has shown that the frequency of cirrhosis is 8-24%, while that of HCC is 0.7-1.3%[10-12], and of liver related deaths 1.6-6.0% after a mean follow-up of 7.6-14 years. The results

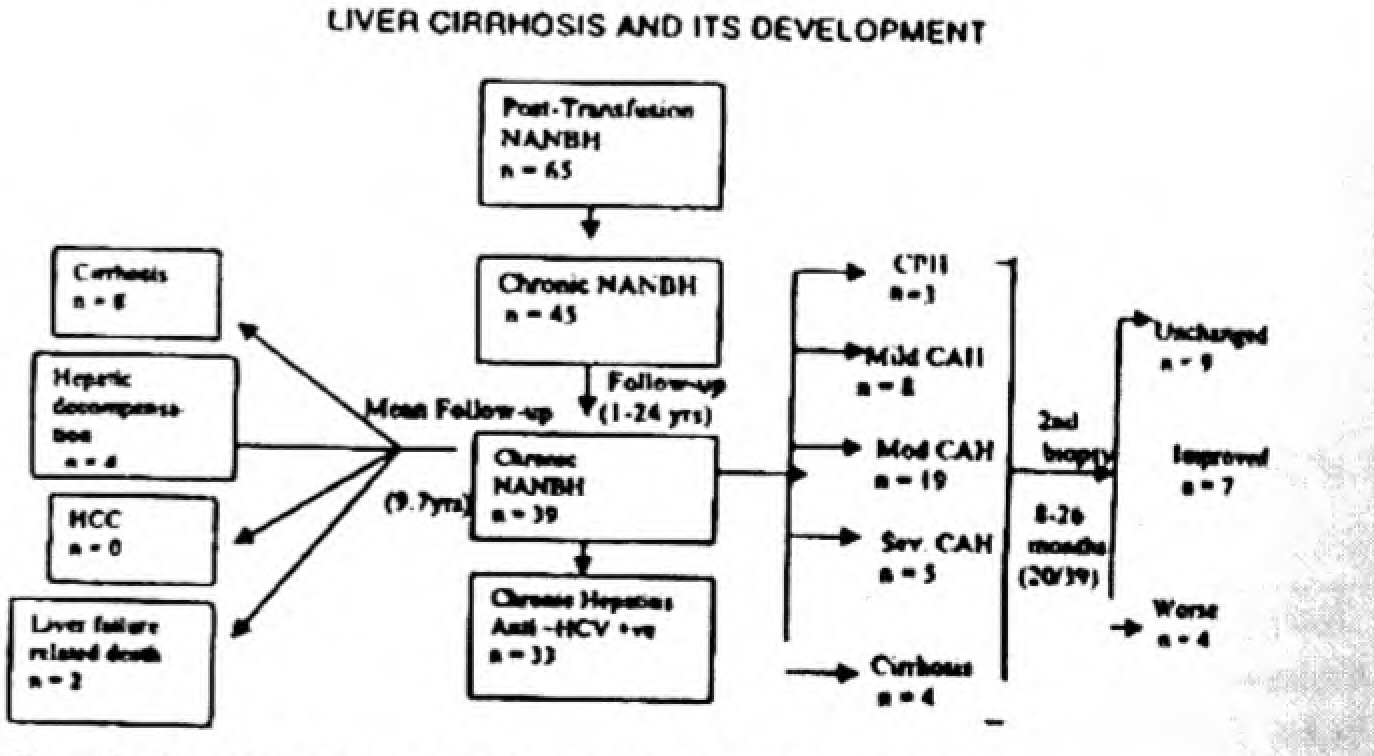

Figure 2 Outcome after acute post transfusion hepatitis (data from Ref. 11).

Table 2 Long-term outcome of chronic HCV infection: data from retrospective–prospective studies

Author; No. Patients	*Source of infection*	*Follow-up (years)*	*Symptoms*	*Passed ALT*	*CPH*	*CAH*	*Cirrhosis*	*HCC*	*Death due to liver disease*
Seef et al.[11] n = 568	Blood/Igs	18	–	–	–	–	–	–	19 (3.3%)[a]
Muller et al.[14b] n = 152	Anti-D Igs	15	–	–	83 (55%)	0	0	0	0
Walsh et al.[15] n = 376	Anti-D Igs	17	304 (81%)	47%	HAI < 4 in 43% No/2 fibrosis in 49%		7 (2%)[c]	–	–
Rodger et al.[16d] n = 35	Community acquired	20	–	16 (44%)	–	–	2 (6%)	0	–

[a] Compared to 15 deaths in 984 control (p = 0.033). Of the 19 deaths in the NANBH group, 2 deaths were due to liver cancer, 11 due to cirrhosis and the rest due to miscellaneous causes. Extended follow up of 23 years showed similar trends

[b] 65% completely recovered; 4 had normal ALT but were HCV RNA positive

[c] Two of the 7 cirrhotics had excessive alcohol consumption

[d] Case control study with most patients having history of IVDA; 60% of those with raised ALT abused alcohol

from one such well defined prospective study are diagrammatically shown in Fig. 2.

Four landmark retrospective-prospective (non-concurrent prospetive) studies have contributed greatly to our understanding of HCV infection[13-16]. These studies have been vital, as they have followed up individuals for a long period after they developed AHC. The results of these studies have been highlighted in Table 2. Taken together, the data from these studies would suggest that benign outcome is quite common after HCV infection and of the 15-20% of persons who develop serious sequelae, cirrhosis is the critical arbiter of a poor outcome. To counter the impression of a seemingly benign outcome of HCV infection derived from these studies, some authorities believe that the patient population in these studies were young, female patients with low or absent alcohol consumption and who might have received small mocula of the virus at the outset.

Outcomes after chronic Hepatitis C (CHC)

The clinical course of chronic hepatitis C is generally long and indolent and a fair number of patients remain 'stable' even when CHC has progressed to liver cirrhosis. Roughly 50% of these patients are asymptomatic. A large proportion of these patients are now coming to the fore during routine testing of blood donors or have vague complaints including right upper quadrant pain/discomfort or malaise/fatiguability or on incidental detection of elevated transminases.

Before discussing the results of large prospective and retrospective studies of outcome of CHC, it is worth addressing the issue of patients who are asymptomatic or have persistently normal ALT. Alberti et al[17] found nine out of 16 patients with normal ALT and no symptoms to have chronic hepatitis on biopsy. All these patients were HCV RNA positive. Gholson et al.[18] studied 50 patients with persistently normal ALT. Although only a few were symptomatic, abnormal histological features were seen in 46 (92%). While 60% of this study population had a grade and/or stage of liver disease ≤ 2, seven were cirrhotic (14%), which underscores the point of stable but significant liver disease mentioned above. At the other end of the spectrum are studies which moot the concept of 'HCV carrier state.' Naito et al.[19] studied 22 HCV RNA positive subjects who had persistently normal ALT for ≥12 months. These workers found a low probability of significant histological lesions, despite the fact that 20 of the 22 patients had genotype Ib (Table 3). However, with advancing age, there was a tendency to more severe histological lesions. morisco et al.[20] studied 27 anti-HCV-positive subjects for a mean of 2-6 years. The follow-up (bio-chemical) showed that the ALT levels remained steady in these subjects. Of the 15 HCV RNA positive subjects in this cohort, the mean ALT was <0.6 times the upper limit of normal (ULN) while in the 12 RNA -negative subjects, it was <0.4 x ULN. The study ALT levels cut across various viral loads and genotypes. The main flaws in this study were, however, that all the study subjects had no history of blood transfusion, IVDA or alcohol consumption, i.e., the study population was a well selected one. In addition, histological disease was assessed in a small number of subjects only. A more important message from this study is that the HCV RNA -positive subjects continued to remain so at the end of follow-up. Similar results were shown by Yokusuka et al.[21], in a much larger study population (n=320), followed up for more than 3 years. In their study of untreated patients, only 2% of the cases became RNA negative at the end of follow-up, and even in those who normalized ALT (3.5%), the RNA levels remained positive.

Table-3: Features of chronic HCV infection in patients with normal ALT[19]

Parameter	Normal histology	Mild CPH	Moderate CPH
Age	42.3±18.5	45.8±10.7	50.±9.3
ALT (IU/L)	15.3±10.4	21.5±5.4	21.1±3.9
HCV RNA (long^{10} copies/ml)	4.3±.2	6.4±.8*	7.1±.5*

8 p<0.05 w.r.t. patients with normal liver biopsy

None of the patients had CAH or LC

New terminology for chronic HCV carrier

The data shown above clearly indicate that the patients

Table 4: Approach to subjects with chronic HCV infection

	Anti-HCV (+) HCV RNA (-) Normal ALT (Group I)	Anti-HCV (+) HCV RNA (+) Normal ALT (Group II)	Anti-HCV (+) HCV RNA (+) Elevated ALT (Group III)	Anti HCV (-) HCV RNA (+) (Group IV)
Approach				
Repeat anti HCV	Yes	No	No	No
HBV	No	No	No	No
Liver Disease	No	Yes*	Yes	Yes
Follow up				
Clinic	12-24 months	6-12 months	Considered as chronic hepatitis C	As for Group III Subjects
ALT	12-24 months	6-12 months		3-6 months
HCV RNA	12 months	12-24 months		Yes
Alpha fetoprotein	No	Yes, baseline		Yes
Ultrasonography	No	Yes, baseline		Yes
Upper GI endoscopy	No	Yes, baseline		Yes
Liver biopsy	No	No consensus		Yes
Management	No treatment	Depends on biopsy (under protocol)	Treat with interferon + ribavirin	Yes

To be considered only if clinical, biochemical, radiological evidence of liver disease is present or [illegible] research protocol prior to therapy

If therapy has to be initiated

Needs to be individualized. It is unsatisfactory in the post-transplant scenario

who are viraemic with normal ALT do continue to have ongoing liver injury, albeit mild. Since HCV infection is a dynamic process, ALT levels may fluctuate. The term 'carrier' is misleading as it connotes a benign state in which there is no harm being done to the subject carrying the virus. Based on an International Consensus Conference, the term HCV carrier was found unsatisfactory and was replaced by chronic HCV infection[22]. Such subjects could be further divided into four categories (Table 4).

Group I: Anti HCV +ve, HCV RNA -ve, ALT normal;
Group II: Anti HCV +ve, HCV RNA +ve, ALT normal;
Group III: Anti HCV +ve, HCV RNA +ve, ALT normal;
Group IV: Anti HCV -ve, HCV RNA +ve, ALT normal.

Some patients in group I may not have chronic hepatitis C virus infection. It would need a liver biopsy to determine whether HCV RNA is present in the liver tissue or not. Otherwise, a positive anti-HCV in subjects belonging to this group may simply reflect evidence of past HCV infection only. A minimum of two negative HCV RNA results, performed 6 months apart, would be necessary to constitute the HCV RNA -ve group I. By 'normal ALT', it is implied in all the groups that the ALT values (determined by using a standardized analyzer) remains persistently normal for a period of at least 6 months. At least three ALT values should be available during this period. Patients belonging to group IV are generally immunosuppressed, and cannot mount an adequate and strong anti-body response. Hence, they are anti-HCV negative but HCV RNA positive. A high index of suspicion is needed to detect them in the specialized group. This terminology is being recently adopted by the Asian pacific Association for Study of the Liver (APASL).

Three large, retrospective studies have addressed the issue of the natural course of CHC; two defining clinical outcomes[23,24] (Table 5) and one addressing the histological and biochemical course[25]. In the first two studies, transfusion was the exclusive source of infection while only about ~35% of the study population in the last had received blood transfusion. Of the 100 patients followed for a mean of 5 years by Takahatashi et al.[25], sustained normalization of ALT was seen in only four cases. Forty-two of these cases progressed to LC from the initial histological diagnosis after a mean interval of 8±6 years. Nineteen of the 100 patients developed HCC, after a mean period of 3 years from the diagnosis of LC.

Table-5: Progression of chronic hepatitis C data from retrospective studies

Study	Source of Infection	Time (mean± s.d.) (Years) Chronic hepatitis	Cirrhosis	HCC
Kiyosawa et al[23] (n=89)	Transfusion	10.0±11.3	21.2±9.6	29.0±13.2
Tong et al[24] (n=131)	Transfusion	13.7±10.9	20.6±10.1	28.3±11.5
- Takahashi et al[25] (n=333)	transfusion 116 (35%) unknown in 217 (65%)	12±12-CPH* 18±12 - CAH2A* 23±9 - CAH2B*	24±8	See text

The largest well defined prospective study on the course of CHC was reported from Germany[26]. The study was conducted at two referral hospitals and enrolled 838 anti-HCV-positive and HCV RNA -positive patients between 1987 and 1997. It was also able to address the issue of response to therapy which was instituted in about a half of these patients. About 32% of the study population had received transfusion, 16% were IVDAs and in 41% the source of infection was unknown. The salient features studied were age at entry, duration of infection and presence or absence of cirrhosis. These parameters were used to compare all cause and specific cause morality in the study cohort and the general population matched for age and sex. The salient results from this study are highlighted in Table 6 and 7. After a mean follow-up of 50.2±26.9 months, 62 patients died (31.1) from disease and 31 from other causes). Using multivariate regression annual survival was decreased by cirrhosis, long duration of disease, history of I and excessive alcohol consumption, while interferon therapy improved survey ALT, bilirubin, sex and genotype had no effect on survival. With respect to I the risk was increased by cirrhosis, long duration of disease and high bilii interferon therapy, genotype and other factors had no impact.

Table 6: Age and duration of HCV infectionin function of liver histology and HCC in CHC patients26

Parameter	Number of patients	Mean duration of infection (years)	Mean age at entry (years)
Stage*			
Neither fibrosis nor cirrhosis	362	9.0	46.3
Fibrosis	88	13.1	53.7
Cirrhosis	130	16.2	57.8
Inflammatory Activity			
No hepatitis/minimal hepatitis	68	13.4*	47.3*
Chronic hepatitis	518	11.8	50.7
Total no. of patients with initial biopsy	586	11.8	50.3
HCC*			
HCC during follow-up	17	21.8	62.2
No HCC during follow-up	821	10.1	49.1
Total no. of patients	838	10.3	49.4

*$p < 0.001$ by ANOVA

# p<0.05 for age at entry and p> 0.05 for duration of infection when patients with histological evidence of CH compared with those without.

Taking into account the results of all the studies, it can be inferred duration of infection is a critical factor in determining the outcome and that histological progression of disease occurs with time, albeit in a non-no distribution pattern. Since HCV infection is a dynamic disease, the term cases misleading and should be replaced by chronic HCV infection.[22]

Outcomes after liver cirrhosis (LC)

Two large retrospective studies have addressed the problem of compensated C cirrhosis: EUROHEP study27 and the Single Centre French study[28]. Both studies had strict inclusion criteria for patient entry as LC and excluded patient with seromarkers for HBV or excessive alcohol intake (≥ 80 g/day). The clinical outcomes were decompensation, HCC and survival. The result shown in Table 8 and 9. The foregoing account underscores the fact that related liver disease can have serious morbidity and mortality and that the effects may occur many years after the onset of infection.

Table-8: Outcome after liver cirhosis in patients with chronic HCV infection

Study (n)	Follow-up	Liver decompensation	HCC	Survival	Death during follow-up
EUROHEP[27] (n=384)	5 years	18%	7%	91%	51(13%)*
FRENCH Study[27] (n = 103)	4 years	20%	11.5%	84%	16(6%)#

36 patients and 15 patietns#, respectively, died due to liver disease related causes.*

Table -9: Factors governing outcome of liver cirrhosis[27,28]

Univariate analysis	Multivariate analysis
Referral pattern*	Age > 54 years
Source of infection	S. bilirubin > 17 mmol/l
Alcohol intake (>80g/day)	Palatelet count <130x10⁹/l
AST > 1.5 x ULN	Hepatic stigmata
AST/ALT > 1	
S. albumin <3.5 g/dl	
prothrombin time prolognation >30%	
IFN therapy	

** patients presenting with transminasaemia or those followed from stage of CHC fared better than those who had LC at the outset.*

# IVDAs and those with history of transfusion had better survival than thosw who source of Infection was unknown

$ 15% and 5% of patients in the 2 studies showed sustained virological responses to IFN. In the French study, treatment with IFN was a significant factor even on multivariate analysis.

DIAGNOSIS & MANAGEMENT OF UNSUCCESSFUL THROMBOLYSIS AFTER ACUTE MYOCARDIAL INFARCTION

Upendra Kaul

Trials of thrombolysis and primary angioplasty have shown that coronary artery patency and flow characteristics following thormbolytic therapy are independent prognostic predictors of the outcome in acute myocardial infarction (AMI)[1-5]. A number of studies suggest that the patency rates with TIMI 3 flow can not be achieved in more than 54% of patients even with the best thrombolytic regimen[1]. The timely detection of this failed reperfusion is very important for the further rational management of patients with AMI. The need is to diagnose it accurately and cost effectively preferably using non-invasive techniques. This has to be followed by prompt and efficient measures to attempt reperfuse these blocked vessels by pharmacological, catheter based or combined strategies.

Diagnosis of failed reperfusion

Cessation of chest pain has been regarded as a clinically predictive sign of reperfusion though its quantification for clinical trials is difficult[6]. Only complete resolution of chest pain is a good predictor and this sign has been reported only in 29% patients with patent arteries[7]. Analgesia which is an important part of the management of AMI can mask this sign. It is therefore necessary to have more objectively defined markers alongwith resolution of chest pain.

Reperfusion Arrhythmias

Although observed frequently after thrombolysis and primary PTCA, none of the observed arrhythmias (such as accelerated idioventricular rhythm) have been shown to add independently to the predictive value of diagnosing reperfusion[7].

Electrocardiography

Non resolution of ST-segment changes after thrombolysis has been shown to be a predictor of worse long-term outcome compared with the cohort with good resolution. This analysis is a better predictor of successful perfusion than failed reperfusion. Studies have shown a variety of ECG indices for reperfusion failed or success. These included 25% reduction in ST-segment elevation identified in the 'worst lead' on the 60-180 min post thrombolytic ECG, the pre to post thrombolysis ECG of maximal ST segment elevation ratio or the sums of post to pre-thrombolysis ST-segment elevation that is equal or less than 0.5. All these indices have been described as having reasonable sensitivity and specificity, irrespective of the infarct site[8,9].

– Continuous ST segement monitoring has also been shown to have a good predictive value for non reperfusion in GUSTO-I study especially when the initial ST segment elevation is more than 4 mms[10].

Biochemical Markers

Of the numerous markers creatinine kinase isoenzymes, troponin-T or I and myoglobin measurements have been used extensively for the early diagnosis of AMI. The rapid peaking of myoglobin seems to be the earliest marker of a successful recannalization, whilst the rate of troponin-T rise over 3 hours post-thrombolysis has revealed very high (94%) sensitivity as well as specificity (100%) in this situation[11]. There is however limited evidence that any of these markers can predict failure to achieve TIMI-3 flow at 60-90 mins with any degree of similar accuracy[12,13]. At present these assays are mostly reserved for post hoc confirmation rather than direct decision, so that they may not help in the tirage of patients with failed reperfusion. Early peaking of levels of these markers while suggesting restoration of flow does not necessarily mean achievement of reperfusion at tissue level (restoration of microvascular reperfusion). The failure of the accuracy and interpretation makes their reliable use difficult in the setting of failed reperfusion, especially in the absence of concomitant ST segment resolution[14].

There is some evidence to suggest that patients who fail to achieve detectable fibrinogenolysis following thrombolysis could benefit from additional thrombolysis. In one small study, benefit was confined to those patients whose fibrinogen remained at greater than 1g1-1 following therapy with streptokinase[15]. Although fibrinogen assay is not routinely tested, this measurement is potentially advantageous for distinguishing patients in whom non-reperfusion is primarily due to non-fibrinogenolysis rather

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than due to no reflow. In such cases it would suggest that further thrombolysis and/or intensified antiplatelet therapy rather than interventional treatment may be beneficial.

Emerging Diagnostic Strategies

Even though Sesta MIBI has good accuracy in assessing patency after systemic thrombolysis, the need to obtain pre-thrombolytic scans preclude this method from wide clinical application[16]. The acute assessment of microvascular perfusion by myocardial contrast echocardiography may be the most promising strategy[17]. Contrast agents are currently being tested in preclinical trials and are likely to become available for clinical trial assessment shortly[18].

MANAGEMENT OF PATIENTS WHERE THROMBOLYSIS HAS APPARENTLY FAILED

Repeat Thrombolysis & Additional Antiplatelet Therapy

Readministering thrombolytic agent is a frequently used strategy although the evidence supporting its utility is very limited. Lack of proven benefit is surprising, considering the potentially large impact such available therapy could have in most hospitals. White et al[19] and Verheugt et al[20] showed benefit in opening the infarct related artery with systemic or intracoronary TPA following failure with systemic streptokinase. Their invastigtions were however made as non-randomised trials. Mounsey et al[15] also showed in a small group of patients stratified on the basis of 25% nonresolution of the ECG that there was benefit with additional intravenous alteplase in terms of improvement in left ventricular ejection fraction at 6 weeks.

Talbe-I: Failed thrombolysis - Non invasive diangosis

1. Non resolution of chest pain.
2. ECG nonresolution of ST-T elevationa (<25-50% resolution at 90-180 min post thrombolysis).
3. Enzyme kinetics.
   Troponin-T or Creatinine Kinase -MB mass or myoglobin ratio post/pre thrombolysis
   <5 at 60 minutes.
   <10 at 90 minutes.
4. Myocardial contrast echocardiography.

Table-2: Therapeutic Options in failed thrombolysis

1. Repeat thrombolysis (newer agent)
2. Glycoprotein IIb/IIIa inhibitors (abciximab, eptifibatide, tirofiban).
3. Intra aortic balloon counterpulsation (IABP)
4. Rescue PTCA.
5. Combination of Gp IIb/IIIa blocker + PCI.

Pathophysiological studies however fail to support the theoretical benefit of such repeated treatment. Moreover there seems to be little benefit from repeating thrombolysis later (more than 6 hours) rather than sooner, as the limited positive impact of late recanalization on reperfusion can be offeset by a small but possible deleterious effect of increased risk of bleeding[21]. The issue of the efficacy of repeated thrombolysis can be sorted out only by a large dedicated trial but in view of more recent advances in targeted antiplatelet therapy the role of repeated thrombolysis may need to be redefined.

The safety of antiplatelet combined with thrombolytic therapy will be assessed in GUSTO IV. TIMI 14 trial[22] has shown that a combinaion of abciximab and ½ dose of tPA is efficacious and gives the best TIMI 3 flow (72%). However the same was not true for the combination with streptokinase which lead to higher bleeding problems including cerebral bleeds. Date of combining thrombolytic & antithrombins continue to suggest that the therapeutic window is narrow. So far however there is no data on the combination of thrombolytics with glycoprotein IIb/IIIa inhibitors in a setting of 'rescue therapy' i.e. where thrombolysis has failed. For its routine use, we will also need information about its safety especially with the potential risk of increased bleeding.

Role of Percutaneous Coronary Intervention (PCI)

It is clear that something needs to be done in patients with clinical signs of failed reperfusion but little is known from the data of trials regarding the true value of the more costly rescue PCI. In the TIMI IV subgroup analysis no significant benefit was shown in the intervention group compared with conservating management[23]. However observational studies by Juliard et al[24] and Kaul et al[25] have shown that rescue PCI results compare well with the primary PCI in the same hospital Kaul et al[25] however have used abciximab in all the patients taken up for rescue PCI in their reported series. Analysis of the intervention subgroup of the GUSTO I sub-study[26] has shown a trend towards improved left ventricular function and 30 day mortality in the PCI group compared with the conservative strategy. The outcome of these patients was however less favourable than the patients in whom initial thrombolysis was successful. Failed rescue PCI in the setting of failed thrombolysis was a significant predictor of high mortality (30%).

Analysis of TAMI-5 study subgroups of patients with an occluded artery post thrombolysis showed no benefit in patients who underwent early rather than pre-discharge PCI[27]. The RESCUE trial compared patients with late signs (>8 hours) of occlusion of left anterior descending artery post thrombolysis and results suggested improvement in left ventricular function and composite end points[28]. The relative benefits in these trials however have been quite modest. The benefits possibly should be significantly more if catheter based inteventions are combined with using glycoprotein IIb/IIIa inhibitors as has been done in the study reported by Kaul et al[25].

Although Primary PCI has been shown to be superior to thrombolysis in patients who can be taken up for the procedure without delay but the impact of this procedure has had very little impact on AMI treatment in a community setting mainly because of logistic reasons.

Referring only patients with failed reperfusion to a cardiac centre with interventional facilities could probably be a good and realistic trade off between additional expenses and resources and significant contribution to the cardiac care in the community. Whether the active research for signs of failed reperfusion in the early stage of AMI is superior to the strategy of initial conservative treatment with pre-discharge risk stratification and selection for late intervention remains to be seen. The use of intra-aortic balloon counterpulsation in a setting of failed thrombolysis can be useful especially in haemodynamically unstable and high risk patients who need transfer for catheter based interventionls. Data from a few trials does suggest the utility of this supportive procedure. A dedicated study funded by British Heart Foundation the REACT (Rescue Angioplasty versus Conservative management of Thrombolysis) has been planned to answer this important question.

Newer strategies such as intracoronary therapeutic ultrasound or thrombectomy could be useful in achieving lysis of intracoronary thrombus as well as promoting microvascular reperfusion[29-33]. There is good theoretical background for their action which if proven in clinical trials, could add to the present armamentarium as adjunctive procedures combined with PCI.

Emerging / Combined Strategies

With the advent of new potent targetted antiplatelet agents there are some promising data suggesting that these agents (abciximab, eptifibatide, etc.) could be very useful not only as a bailout measures prior to and during intracoronary interventions but also as a primary adjunctive treatment[34]. In the TIMI-14 study thrombolysis was facilitated with a combination of reduced doses of alteplase and abciximab[22]. Data from the GRAPE study suggests that abciximab used in anticipation of further intervention could recanalise upto 40% of the occluded vessels[35]. It is therefore likely that a combination of all reperfusion methods (thrombolysis, antiplatelet agents, intracoronary interventions) could offer the best reperfusion strategy in AMI. To this end, data from SPEED trial[36] advances these efforts by demonstrating that it is safe and efficacious to perform PI after either thrombolytic monotherapy or combination therapy (rPA and abciximab). The study however suffers from the limitation that it is a nonrandomised comparison.

Conclusion

Failed thrombolysis continues to be a significant clinical problem in the management of patients with AMI. There is no proven strategy which is clearly superior and can be recommended as the treatment of choice. In the absence of sound clinical data it however seems logical to recommend a careful, frequent assessment of the patient's clincial status after instituting systemic thrombolysis. This should include frequent 12 lead ECG control. A 90-120 min recording is very important which could form a basis for consideration for further management which could be PCI after administering Gp IIb/IIIa blockers, if the option is easily achievable.

It is likely that patients with failed thrombolysis comprise a heterogenous group with different levels of failed lysis, microvascular no reflow or different degrees of critical narrowing in the target or infarct related vessel. Careful evaluation of these factors in the individual patients will result in a more tailored and tiered approach.

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HORMONE REPLACEMENT THERAPY BENEFITS AND RISKS

Shagufta Yasmeen MD, MRCOG

Introduction

The number of women over the age of 55 years will increase to 45.9 million by the year 2020 in the United States. Despite this increase, the average age of menopause has remained stable at 51.4 years. Consequently, one third of a woman's life will be spent beyond menopause (1,2).

Although menopause is a natural process, the decline in the endogenous estrogen levels can present a significant risk for chronic diseases. The primary goals for managing menopausal health are to impart a quality of life that promotes optimal health and vigor and staves off the diminution of function that can result in problems such as impaired eyesight; loss of hearing, impaired cognition and memory. Early symptoms from estrogen loss relate to vasomotor instability; however long term effects are associated with significant health risks Table 1. Significant reduction in all-cause mortality has been demonstrated in estrogen users compared with nonusers (3).

Estrogen

The primary site of estrogen biosynthesis in the adult female is in the ovary. Estrogens perform a wide range of bio-regulatory activities in addition to their primal function of modulating female reproduction. After menopause, the ovarian production of estrogen declines dramatically leading to significant disadvantages. These include loss of reproductive function, actions on the bone, brain, vascular tree, gut, and immune system. There is a growing body of evidence that estrogen exerts beneficial effects on the tissues of the skeletal, urogenital, digestive, cardiovascular, ocular, and nervous systems. However; there is a concern about long-term estrogen replacement therapy (ERT) (4).

Estrogen Receptors

There are two types of estrogen receptors, ER-alpha and ER-beta. The (receptor is smaller than the (receptor but the homology in amino acid sequence is suggestive of a similar mechanism of action. However, these receptors can differ in distribution and in their affinity for estrogen, Table 2 (5).

Table 1. Estrogen loss and menopausal health

Early	Intermediate	Late	Very Late
Vasomotor symptoms	Vaginal atrophy	Osteoporosis	Tooth loss
Hot flushes	Urinary symptoms	Cardiovascular diseases	Urinary tract infections and urinary incontinence
Mood disturbances	Skin changes	Dementia	
		Cancers	

Table 2. Distribution of α and β estrogen receptors

System	α	β
CNS	+	+
Blood		+
Vessels		+
Bone		+
Lungs		+
Liver	+	
Urogenital Tract		+
Uterus	+	
Ovary	+	
Breast	+	

Mechanism of Action

Regardless of the receptor subtype, the binding of estrogen to the ER results in receptor activation. The estrogen-activated receptor complex binds to DNA and stimulates gene transcription. The presence or the absence of the ER determines whether a cell is estrogen responsive. The biologic effect of an ER-ligand in a specific tissue is determined by the expression of ER-alpha and ER-beta. The binding of the ligand, such as estradiol to the receptor, induces a conformational change within the protein structure. This involves the dimerisation and release of the attached heat-shock proteins. The key to an agent's ability to activate the estrogen receptor (ER) is the possession of an aromatic ring corresponding to the steroidal 'A' ring of the estrogen figure 1 (6).

The variety of the ligands accepted by the receptor is also a function of its size. The activation of one or both "activation function" domains of the ER, styled AF-1 and

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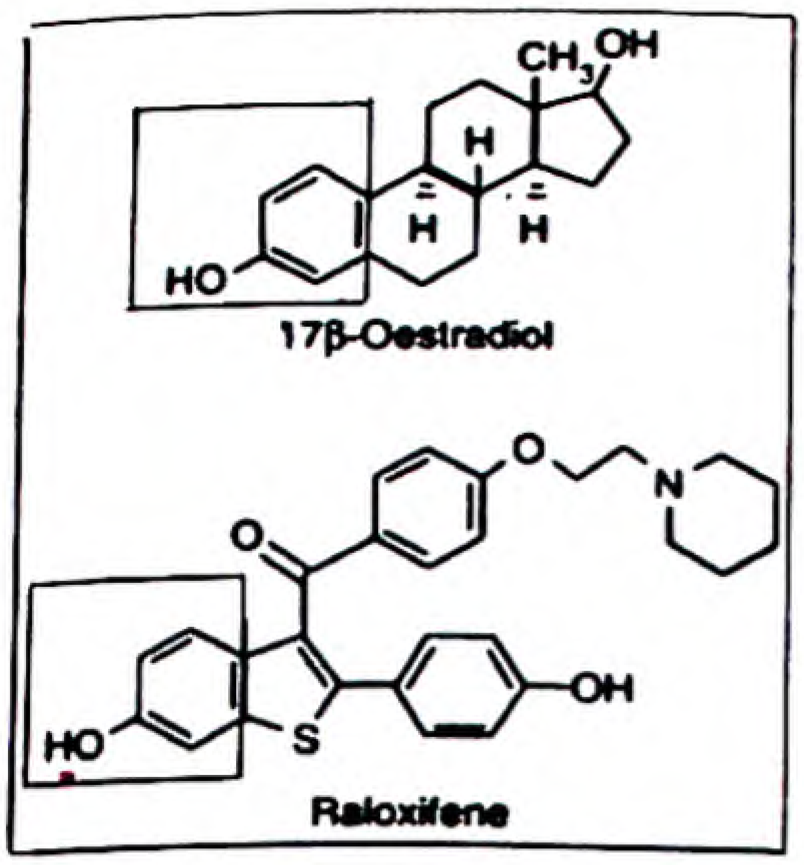

Figure 1. Chemical structure of17 beta–oestradiol ; binding of ligand to the receptor depends upon the possession of an aromatic ring corresponding to the A ring of the estrogen (boxed region)

AF-2 alters down-stream gene transcription and co-activator recruitment.

ER has a potential for manipulation at different levels. As scientific knowledge of the complexity of the ER advances, the ability to design and deliver highly targeted drugs will continue to evolve Figure 2 Table 3.

Health related menopausal conditions and treatment options

Coronary Heart Disease

Coronary heart disease (CHD) is one of the leading causes of death among postmenopausal women. A fifty-year old woman has a 50% chance of developing CHD, and about a 30%, chance of CHD related mortality ⁽²⁾. The lifetime risk of CHD in men and women is equal, however CHD is rare in premenopausal women. Estrogen loss has been linked to increased incidence of CHD in postmenopausal women. This lead to the hypothesis that postmenopausal ERT could be protective against CHD ⁽⁷⁾.

One of the most difficult decisions that a healthy postmenopausal woman faces is whether to start hormone therapy. The obvious CHD benefits of HRT make up an important part of this decision. Multiple observational studies have supported overall protection against CHD of up to 50% in hormone users. However there was no distinction between primary and secondary protection from these studies⁽⁸⁾. This observation has been challenged by the HERS study, which examined secondary protection only. This study showed that cardiovascular events and mortality increased in postmenopausal women with prior history on myocardial infarction, but this risk did not persist beyond 2 years ⁽⁹⁾. There are encouraging animal studies showing the slower progression of atherosclerosis secondary to improved endothelial function, inhibition of vascular smooth muscle proliferation and vasodilatation⁽¹⁰⁾ Table 4.

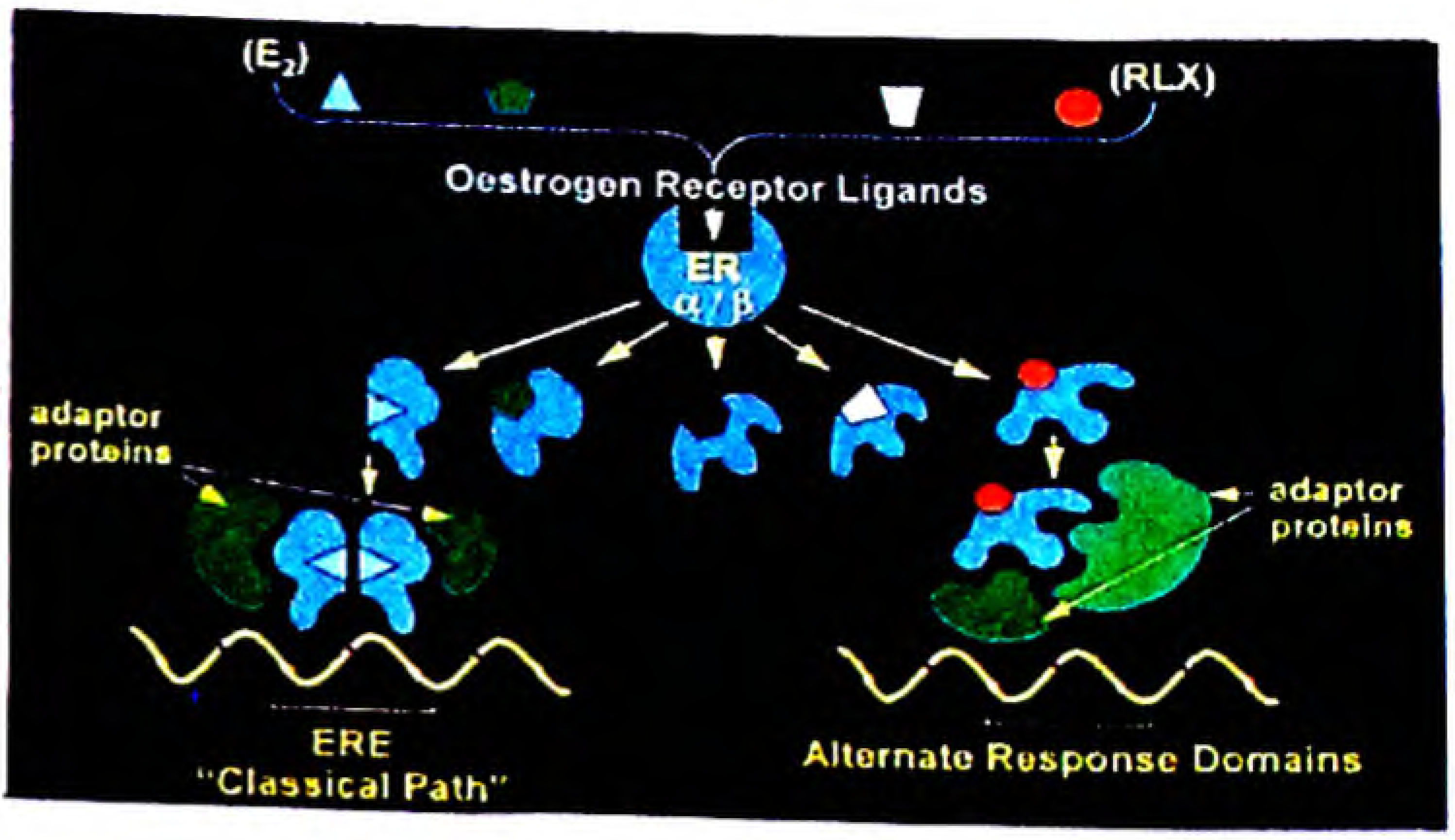

Figure 2. Estrogen receptor (ER) transcription pathway

Table 3. Effect of estradiol, SERMs and isoflavones on various organ systems

	Brain	Uterus	Vagina	Breast	Bone	Cardiovascular System
Estradiol	++	++	++	++	++	++
Raloxifene	-	-	-	-	+	+
Isoflavones	+	-	(	-	+	+
Ideal SERM	++	-	++	-	++	++

Table 4. ERT and Serum Lipids

ERT

	10-15% ↓ in LDL cholesterol
	10-15% ↑ HDL cholesterol
↑	HDL2 cholesterol
↑	12% Apolipopritein A-1
↔	Apolipoprotein B
↔	Fibrogen levels
↓	Plasminogen activator inhibitor
	Triglycerides (TG)
↑	Oral preparations
↑	Transdermal has less impact

Symbols: ↑ *Increase*
↓ *Decrease*
↔ *No change*

In summary, postmenopausal hormone use appears to decrease risk for major coronary events in women with no prior heart disease. Furthermore, a 0.3-mg dose of oral conjugated estrogen daily is associated with reduction similar to a standard dose of 0.625mg or greater. However, estrogen at a dose of 0.625 mg or greater in combination with progestin may increase the risk for stroke ⁽⁸⁾.

Osteoporosis

Osteoporosis currently affects more than 25 million women and causes an estimated 250,000 hip fractures each year. Osteoporosis is characterized by reduction in bone mineral density (BMD) to the extent that fractures occur after minimal trauma. Bone mass normally begins to decline with age and as the result of an imbalance in bone remodeling. Approximately 20% of bone loss takes place in the first 5-7 years after menopause due to estrogen deficiency. However, osteoporosis is preventable and treatable and estrogen has demonstrated clear benefit in both prevention and treatment (11,12).

Table 5. ERT and Osteoporosis

ERT
Antiresorptive agent
Cessation of bone loss
↑ BMD
↓ in osteoporotic fractures
Long treatment of 10-15 years have sustained effect on BMD and optimal fracture protection

Table 6. Management of Osteoporosis

Therapy*	Decrease in fracture rates	Approximate increase of BMC (%)**
Estrogen CEE)	Yes†	5-6%
Alandronate	Yes†	5-6%
Raloxifene	Yes†	2-3%
Calcitonin	Yes	1-2%
Fluoride	Yes/No†	10%
Calcium	No#	1-3%

* *All therapies* include calcium supplementation*
** *Treatment time 2-3 years*
† *Dose effect*
# *Except for patients with prior low Ca*

Bone turn over involves resorption of old bone by osteoclasts and formation of new bone by osteoblasts. Both types of cells have estrogen receptors. Estrogen loss in the postmenopausal period leads to increased osteoclastic activity accelerated bone loss and osteoporosis. ERT reduces bone turn over by inhibiting osteoclastic activity. In Postmenopausal Estrogen/Progestin Intervention Trial (PEPI) premarin/combined equine estrogen (CEE 0.625mg) use for 3 years increased spine bone mineral density (BMD) by 5% and hip by 2.5% (7) (Table 5&6).

ERT is unlikely, to completely eliminate the risk of fracture for women at risk of osteoporosis, but can be expected to reduce the risk by approximately by 50%.

Timing and duration of treatment with ERT is an important issue. One option is life long treatment commencing at the time of menopause. This will decrease the risk of fracture by 2/3rds around the age of 80 years. Acceptability is lower due to adverse estrogenic effects such as vaginal bleeding (VB), venous thromboembolism (VTE), stroke and risk of breast and endometrial cancer. Second option is to commence treatment following a fracture, or start ERT years after menopause when risk of fracture is high. Lower acceptance may be due to VB, breast tenderness, and risk of VTE.

In conclusion, treatment ERT is an established approach for osteoporosis treatment and prevention. Observational studies have indicated 50% to 60% reductions in the risk of hip fracture and 90% reduction of vertebral deformation from fracture. Low dose estrogen therapy has emerged as treatment option due to the potential of dose related side effects such as breast tenderness, vaginal bleeding, pelvic discomfort and mood changes. In a study with low dose estrogen (CEE 0.3mg) in combination with 25 hydroxyvitamin D and calcium produced similar gain in BMD as seen in PEPI trial. This may be an age-related effect, because low dose of estrogen was effective in preventing bone loss from the spine, but less effective in maintaining the hip BMD (13). In presence of contraindications to HRT, alandronate and raloxifene have shown fracture reduction of 40-50% respectively. There have been no trials of postmenopausal ERT having hip fracture as a primary end point.

Not all treatment options have been shown to reduce fracture rates, an increase in BMD does not always equate with fracture data as is seen with fluoride treatment (Table 6).

Vasomotor Symptoms

Vasomotor symptoms such as hot flashes, night sweats, and insomnia are the most common self-reported symptoms of natural and induced menopause. Hot flashes occur in 75% of women and are prevalent in the first two postmenopausal years. Vasomotor symptoms are a major reason for taking hormone replacement therapy (HRT) in the early postmenopausal period. Their precise etiology remains controversial, but symptoms are associated with a drop in estrogen concentration. ERT in any form can relieve the vasomotor symptoms(14). Complete elimination of vasomotor symptoms with HRT has not been well established. Higher doses of estrogen should be avoided due to the risk of hypoandrogenic state from reduced bioavailability of free testosterone from an increase in sex hormone binding globulin levels.

Table 7. ERT and Cognitive functions

ERT

Asymptomatic women:
No change on formal cognitive testing.

Symptomatic women:
Improved cognitive performance in tests of verbal memory, vigilance, reasoning and motor speed.

Both groups:
No effect on visual recall, working memory, complex attention, mental tracking or verbal function.

Table 8. ERT and Urogenital symptoms

ERT
Symptoms secondary to urinary and vaginal atrophy respond to local and systemic therapy subjectively
(Excluding urinary incontinence)
No objective improvement on urodynamic testing

ERT remains the main treatment option for vasomotor symptoms. Well being, mood changes and cognitive function symptoms. Menopause alters the central nervous system functions, which can manifest as hot flushes; mood changes, and sleep disturbances. In addition estrogen loss has been associated with cognitive decline and dementia. Observational data suggested a relationship between life long endogenous estrogen exposure and cognition. It has been hypothesized that ERT might prevent cognitive decline and dementia(15).

Met analysis of 9 randomized controlled trials and 8 cohort studies have offered provisional conclusions about the effects of postmenopausal estrogen on cognition and risk of dementia (Table 8). No deleterious effects on cognition have been reported with ERT(16) Table 7. ERT remains the treatment of choice for relief of symptoms.

Table 9. ERT and Breast Cancer

ERT
Short term use <5 years
No increase in risk for breast cancer
Relative risk of breast cancer increases over 2.3% for each year of HRT use
Long term use >5 or more years
Increases RR of breast cancer to approximately 35%
No additional risk with HRT for women with a family history of breast cancer
Breast cancer related mortality has not been shown to increase with HRT use

Table 10. ERT and Endometrial Cancer

ERT
Unopposed estrogen:
(CEE 0.625)
Risk of endometrial cancer is 2-8 fold higher than for the general population.
Risk of endometrial hyperplasia is approximately 40% with 3 years use of CEE (PEPI trial).

Sexuality and Urogenital Symptoms

About one third of postmenopausal women experience urogenital symptoms including vulvovaginal itching, burning, dyspareunia, recurrent vaginitis, urinary frequency and dysuria. These changes are related to estrogen deficiency in the context of atrophic changes of epithelium. Estrogen deficiency in periurethral tissues is also a factor for connective tissue laxity and loss of muscular tissue support later on. This may eventually lead to pelvic organ prolapse and incontinence. ERT including the testosterone have demonstrated beneficial effects in women with surgical menopause. In postmenopausal women, ERT improves urinary incontinence subjectively; however, objective urodynamic assessment has failed to support a role of ERT(17) Table 8. ERT in topical form remains the treatment of choice.

RISKS WITH ERT

Breast Cancer

Concerns about the association of breast cancer and exogenous estrogen use is a major reason why HRT is currently used by less than 20% of eligible postmenopausal women in the US. Furthermore, 50% of women who are prescribed HRT will discontinue treatment within the first year and 30% will never fill their first prescription(4). Postmenopausal women with high serum concentration of estradiol have the highest risk of breast cancer; however, 50% of women who develop breast cancer have no identifiable risk factor other than age. Estrogen may be a promoter of breast cancer by stimulating growth of cells in which cellular changes have already begun rather than having a direct causative role as a carcinogen(18,19) Table 9.

The risk of breast cancer is probably in the range of 20%-30% with a moderate dose of estrogen in women who are susceptible. These women cannot be identified, before therapy is initiated; therefore, evaluation of the known risk factors is crucial. In addition, breast cancer diagnosis does not translate into higher mortality for HRT users The recent trend is to support a lower dose of estrogen for long-term use, as dose in addition to duration, is associated with higher risk for breast a cancer.

Venous thromboembolism

Venous thromboembolism is a serious common disorder with an estimated annual risk of 1in1000 at age sixty and doubles every 10 years. Several studi [illegible] cate that oral estrogen replacement increases veno[illegible]romboembolic events. VTE occurs independent of the dose of estrogen and opposed and unopposed regimens. ERT is associated with 2-4-fold increase in VTE (14).

Women with a family history of thrombosis or VTE with oral contraceptives or other prior estrogen use should be counseled carefully and monitored closely for VTE while on ERT.

Endometrial Cancer/Vaginal bleeding

One of the big concerns of women taking HRT is the return of vaginal bleeding. Patterns of vaginal bleeding vary with the HRT regimen, as unexpected bleeding may be a sign of endometrial hyperplasia. In postmenopausal women, HRT (estrogen progestin therapy) causes vaginal bleeding and continuous therapy may not always be effective in maintaining amenorrhea. Endometrial ablation appears to be one of the methods of treating women with recurrent bleeding without intrauterine causes(7) Table 10.

Colon Cancer

Some epidemiological data suggest that women who use estrogen are protected from colon cancer. The precise mechanism is not known and there are presently no recommendations.

Dental Health

Evidence for direct effect of estrogen in preventing gingivitis and periodontal disease is promising but there is sparse evidence for an over all tooth maintenance effect. Studies have not assessed whether women who use ERT soon after menopause maintain a tooth retention benefit.

Conclusion

Epidemiological data support a consensus view that, balanced estrogen therapy provides substantial relief for mild to severe vasomotor symptoms. After several years of use and regardless of the regimen selected, estrogen can be gradually withdrawn without provoking symptoms. Short-term therapy does not seem to impose negative consequences other than a slight risk of venous thrombosis. A consensus on the relative merits of chronic administration has not been clearly established because of multiple target tissues and a lack of available data from randomized control trials (RCT).

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LONG TERM RESULTS OF SURGICAL TREATMENT FOR PESCAVUS

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Abstract: *Pes cavus is a complex foot deformity of diverse etiologies. Its treatment continues to challenge the orthopaedic surgeons due to multiple combinations of clinical deformities and the varying patterns of muscle imbalance. An assortment of surgical procedures are used to relieve symptoms, correct the deformity and prevent recurrence.*

The results of surgery were assessed in 33 patients with a mean follow up of 65 months. Excellent to good results were shown by 90% of patients who had soft tissue surgery only, 65% with metatarsal osteotomy, 57% with Cole's dorsal midtarsal wedge arthrodesis and 40% with Jahss's tarsometatrsal truncated wedge arthrodesis.

It is concluded that soft tissue procedures are most useful for correction of flexible deformity especially in younger patients. Bony procedures should be performed for rigid deformity in skeletaly mature patients. Proximal metatarsal osteotomy give better outcome as compared to other midfoot osteotomies/arthrodeses.

Key words: *Pes cavus, osteotomy, arthrodesis*

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INTRODUCTION

Pes cavus is defined as an increase in longitudinal arch height due to a dropping of the anterior arch with plantar flexion of the forepart of the foot, with a variable amount of claw-toes. Steindler (1921)[1].

The pathomechanics and natural history of pes cavus deformity vary with aetiology. It is now generally recognised that the deformity is multifactorial and there is no single procedure which would be universally applicable to correct it. Results of surgical procedures for Pescavus are difficult to evaluate and compare because of variety and combinations for procedures as well as lack of uniformity in outcome criteria. This study assessed the results of commonly used surgical procedures for correction of the cavus component, according to the modified American Orthopaedic Foot Society Clinical Rating system for midfoot. (AOFAS)

Material and Methods

This retrospective study looked at 41 patients who were identified to have had corrective surgery for cavus component of PES CAVUS deformity at the Royal National Orthopaedic Hospital, Stanmore, UK between 1990 and 1998. 33 patients were not available for the study. The patients were sent a questionaire and were later examined in the review clinic. A modification of AOFAS rating system was devised for better representation of Pescavus deformity. The total score was 90. The scores were grouped as Excellent (73-90), Good (59-72), Fair (46-58) and Poor (0-45). A successful treatment of pescavus was defined as relief of pain, correction of deformity and restoration of function by achieving and maintaining a balance foot. The patients were asked to rate the results of surgery on a scale of 0-10 where 0 was marked as poor and 10 as excellent. Where the result was rated less than 5, a further explanation was sought from the patient about the basis for lower rating. These results were grouped as excellent, good, fair and poor. (table 2).

Table 1. Modified American Orthopaedic Ankle & Foot Society Midfoot Scoring System (Total 90)

Pain (40 points)	
None	40
Mild, occasional	30
Moderate, daily	20
Severe, almost always present	0
Function (50 points)	
Activity limitation, Support	
No limitation, no support	10
No limitation of daily activities, limitation of recreational activities, no support	7
Limited daily and recreational activities, cane	4
Severe limitation of daily and recreational activities, walker, crutches, wheelchair	0
Footwear requirements	
Fashionable, conventional shoes, no insert required	5
Comfort footwear, shoe insert required	3
Modified shoes or brace	0

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Callus	
No callus or asymptomatic callus	5
Symptomatic callus	0
Ankle giving way	
No	5
Yes	0
Maximum walking distance, yards	
Greater than 600 yards	10
400 - 600 yards	7
100 - 400 yards	4
Less than 100 yards	0
Walking surfaces	
No difficulty on any surface	10
Some difficulty on uneven terrain, stairs, inclines, ladders	5
Severe difficulty on uneven terrain, stairs, inclines, ladders	0
Gait abnormality	
None, slight	5
Obvious	3
Marked	0

RESULTS

Surgical procedures were divided into 5 types according to the main procedure done for cavus correction; Soft tissue procedures, Metatarsal osteotomy, Dorsal midtarsal wedge osteotomy, Jahs's truncated wedge osteotomy and triple arthrodesis. (table 2). It was difficult to categorise patients into a single operative group as many patients had more than one operation for the recurrent deformity over the period of time. In cases, where more than one procedure was done , the last major operation was accounted. Patients who had only soft tissue procedures were considered in the soft tissue group. Where bony procedure was done in addition to the soft tissue, the bony procedure was accounted.

The soft tissue procedures were plantar fascia release, Steindler's release, soft tissue release and elongation of Tendo-Achilles. Soft tissue correction of deformities were performed on 10 feet in 8 patients, 4 male and 4 female. The mean age at surgery was 20 years, range 12 to 33. The follow-up period ranged from 2 - 6 years, mean 4.5 years. 6 patients achieved excellent, 3 patients gave good result and 1 patient had poor result. (table 2)

Dorsal metatarsal osteotomy was performed on 14 patients (20 feet) There were 7 males and 7 female patients. First metatarsal was always operated upon and the lateral metatarsals were included depending upon the severity of the deformity. A plantar fascia release or Steindler's release was always done prior to closing the wedge osteotomy. This was to allow the metatarsals to straighten up after closing the wedge osteotomy. The average age of patients was 22 years (12 - 54) and average follow-up period was 7 years (1-18 years). 6 patients scored excellent, 5 achieved good, 4 gave fair result and 5 patients had poor result on the scoring system. (table 2).

Dorsal midtarsal wedge was performed in 5 patients (7 feet). The average age at operation was 18 years (8-23) and follow up period was 13 years (4-19). 4 patients had good results and 2 had fair result. One patient scored poor because of severe pain limiting his walking distance which was made worse because of poor result of metatarsal osteotomy in his other foot.

Four patients (5 feet) had Jahss tarsometatarsal truncated wedge arthrodesis. 2 patients (3feet) gave good result and two patients achieved poor score.

Two patients who had triple arthrodesis had multiple corrective surgeries prior to this salvage procedure. One patient achieved excellent score and other reported poor result.

	Excellent	Good	Fair	Poor
Soft tissue surgery	60% (n=6)	30% (n=3)	0	10% (n=1)
Metatarsal osteotomy	30% (n=6)	35% (n=7)	20% (n=4)	15% (n=3)
Dorsal midtarsal wedge osteotomy	0	57% (n=4)	29% (n=3)	14% (n=1)
Jahs' truncated wedge arthrodesis	0	40% (n=2)	20% (n=1)	40% (n=2)
Triple arthrodesis	50% (n=1)	0	0	50% (n=1)

Table 2. Modified American Orthopaedic Foot & Ankle Society Scoring results

DISCUSSION

Pes cavus is a foot with a high arch that fails to flatten with weight bearing. It consists of equinus deformity of forefoot in relation to hindfoot and is often accompanied by clawing of toes. While a pure cavus deformity does occur, more often than not it is associated with forefoot and/or heel varus deformity. This complex foot deformity presents in varying degrees of severity.

A knowledge of etiology of pes cavus is essential for successful treatment of the deformity. The pathomechanism that produce a cavus foot vary with the disease process. There is little doubt that in majority of cases the condition is caused by a muscle imbalance, however, which muscles are producing the imbalance is still controversial.

The successful treatment of pes cavus has been a challenge, a concern and a problem for orthopaedic surgeons since surgery was accepted as a method of treatment. The goal of surgical treatment is to produce a plantigrade, stable foot. A review of literature on the development of treatment for this condition reveals that a large number of surgical procedures and their modification have been described for the treatment of pes cavus. There is no single surgical procedure, that could be universally applicable to the pes cavus deformity. The severity of deformity in pes cavus may vary greatly and routine use of the same procedure for all such deformities does not seem appropriate. In fact unless the surgery is tailored precisely to address the underlying pathology, it will invariably fail. The surgical procedures are generally divided into soft tissue and bony procedures.

A variety of soft tissue surgical procedures, alone or in combination with bony surgery have been described. The keystone procedure is a plantar fascia release. This at times, can be extended to Steindler's release, which involve in addition, subperiosteal stripping of short muscles attached to calcaneus. Tendon transfers and or lengthening are used to correct the dynamic components of pes cavus deformity depending upon the severity and location of deforming component. Paulos et al (2) in 1980 demonstrated that foot deformity in some older children could be successfully treated with soft tissue procedures alone. Roper and Tibrewal in 1989(3), reported that the deformities in pes cavus in Charcot Marie Tooth disease could be treated by soft tissue surgery alone, which could certainly postpone the necessity for triple arthrodesis and, in many cases, might obviate its need altogether. They suggested that surgery should be performed early in life and before deformity became severe, although in older patients with severe deformity, reasonably satisfactory results could be obtained. In this study, 90% of these patients achieved excellent to good result at a mean follow up period of 4.5 years. This suggests that soft tissue procedures are most useful for correction of flexible deformity especially in younger patients.

There have been a variety of osseous procedures described in the treatment of pes cavus. These procedures are usually most useful for significant fixed deformity or in the case of supple deformity with unattainable muscle balance. Metatarsal osteotomy for correction of forefoot deformity in pes cavus was described by Swanson et al in 1956(4). They presented good results in four patients where in dorsal closing wedge osteotomy was performed at proximal parts of the metatarsals using green stick technique. Fixed plantar flexed first metatarsal can be addressed with a dorsal closing wedge osteotomy of the first metatarsal. Alexander, I.J. and Johnson, K.A., 1989 (5). Later in 1990 Watanabe (6) showed 84% excellent or good results in 50 operations performed on 39 patients. He described it as a technically easier and safer procedure because the osteotomy is performed in an arch area where the neurovascular bundle is protected by the intrinsic muscle mass. In this study none of the patients had osteotomy of all five metatarsals as described in the original technique. A selective approach had been adopted depending upon the involvement of individual metatarsals in the formation of cavus deformity. Since the first metatarsal is almost always involved in the forefoot plantaris deformity, all patients had at least first metatarsal osteotomy, followed if necessary the second, third or fourth metatarsals. This study shows 65% excellent to good results, 20% achieved fair result and poor result was shown by 15 % of patients. These results were far less than 84% success rate described by Watanabe.[6]

A variety of midfoot osteotomies/arthrodeses have been utilised for correction of rigid pes cavus deformity. Saunders J T (1935)[7] described an anterior tarsal wedge resection for correction of severe rigid pes cavus deformity. He reported excellent results in 59 out of 102 patients. In half of the cases the anterior tarsal wedge resection was combined with additional soft tissue procedures. Cole WH in 1940[8] described a dorsal wedge osteotomy involving the midtarsal bones. The size of the wedge depend upon the amount of cavus component. He suggested this procedure only after soft tissue surgery had failed. In this study 4 feet (57%) gave good result, 2 feet (29%) achieved fair and one foot (14%) got poor result.

Jahss M H in 1980,[9] described a new technique of midfoot arthrodesis for correction of pes cavus deformity but, expressed the need of a normal muscle balance as a prerequisite.. A dorsal truncated wedge was removed at the tarsometatarsal joints. He claimed that a truncated wedge did not shorten the overall length of the foot, but only lower the height of foot, making wearing of shoes comfortable. He reported excellent results in regard to relief of metatarsal pain, calluses and deformity in patients with mild to moderate deformity and satisfactory results in more severe cases. In this study good results were shown in 2 feet (40%), fair in one foot (20%) and poor in 2 feet (40%). It is difficult to comment on the success of this procedure because of small number of patients in this study as well as short follow up period (2-3 years). The poor results shown in this study were mainly because of failure to relieve pain and ankle instability.

Most authors who have discussed operative management of pes cavus deformity include triple arthrodesis as a consideration. Triple arthrodesis and appropriate soft tissue procedures should be most useful for the treatment of severe cavovarus deformity with markedly limited subtalar motion in a skeletally mature foot. Triple arthrodesis removes the shock absorber function of the middle and hind parts of the foot. The ankle is subjected to increased stress. This is a major problem for patients who have peripheral neuropathy. The recurrence of deformity and high incidence of residual deformity along with loss of proprioception and balance makes the ankle joint vulnerable to instability and eventual osteoarthritic changes. Wetmore and Drennan[10] 'reported 47% long term poor results in Charcot-Marie-Tooth disease patients who had triple arthordesis. Wukich et al[11] demonstrated radiographic evidence of degenerative joint disease in 62% feet and 24% ankles which had triple arthrodesis for pes cavus in Charcot Marie Tooth disease. Mann and Hsu[12] believe that triple arthrodesis provides a stable plantigrade foot in the face of a progressive disorder. They suggest triple arthrodesis as an index or primary bony procedure, requires few subsequent procedures to treat recurrent or residual deformity. They reported satisfactory result in 5 out of 12 patients with Charcot Marie Tooth disease who had triple arthrodesis for pes cavus deformity. Only two patients in this study underwent triple arthrodesis. Both had multiple surgeries prior to triple arthrodesis which was used as a salvage procedure. One showed excellent result and other gave poor outcome.

Results of the surgical procedures for pes cavus deformity are difficult to evaluate and compare because of variety and combination of procedures. Lack of uniform preoperative data made it impossible to construct a retrospective picture of the preoperative condition. Moreover many patients had multiple surgeries for the correction the progressive deformity. Therefore interpretation of the results of an isolated procedure in such cases would be difficult. Soft tissue surgery had generally given better results. In most of the cases, surgery was done on a virgin foot and the deformity was flexible as well. Among the midfoot procedures metatarsal osteotomy showed better overall results. Majority of these cases had first ray predominance in cavus formation, where this procedure was best indicated for correction of the deformity. The dorsal midtarsal wedge arthrodesis and Jahss tarsometatarsal truncated wedge arthrodesis gave comparable results. These were done on rigid feet with moderate to severe deformities which in many cases was progressive.

Surgical treatment of pes cavus requires meticulous planning. In early cases when the deformity is mild and foot is supple, soft tissue procedures will correct the deformity and may halt or delay the need for extensive bony surgery. Appropriate tendon transfers may be required to achieve a balanced foot. There is little doubt that with a plantar flexed first metatarsal, in some cases second or third as well, a closing wedge dorsiflexion osteotomy at the base of first metatarsal is the treatment of choice. In cases of global anterior cavus, where all the tarsometatarsal joints are hyper plantar flexed, various midfoot procedures exist, but each has inherent pitfalls. Correction can be achieved through multiple metatarsal osteotomies, Jahss tarsometatarsal truncated wedge arthrodesis or Cole's dorsal midtarsal closing wedge arthrodesis/osteotomy. Occasionally triple arthrodesis, as a salvage procedure is required. The need for hindfoot correction can be determined by Coleman's lateral block test. In patients with fixed hindfoot varus, a calcaneal osteotomy is required.

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CLINICAL PROFILE AND OPERATIVE MANAGEMENT OF BLUNT ABDOMINAL TRAUMA (BAT): A RETROSPECTIVE ONE-YEAR EXPERIENCE AT SMHS HOSPITAL, KASHMIR, INDIA

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Abstract: Blunt abdominal Trauma is a difficult entity as compared to penetrating abdominal trauma because injury is less obvious as compared to latter. This study was conducted in the department of General Surgery SMHS Hospital Srinagar to evaluate the various causes, management protocol and final outcome of cases related to Blunt Trauma Abdomen in our valley. 63 such patients were taken into the study group leaving aside those cases where head injury was associated. Road traffic accident was the common causative factor (60.3%) while Splenic injury was the commonest Intra-abdominal injury (42.8%). Splenectomy was the commonest procedure done (42.8%) followed by hepatoraphy (14.2%). There was an overall mortality of 14.2% (9/63) postoperatively, however there was no intra-operative deaths in our study. Commonest cause of death was persistant irreversible shock (55.5%), Cardiopulmonary arrest (33.3%) & Septicemia (11.3%). Maximum deaths occurred in patients who underwent Hepatoraphy (66.6%) followed by Splenectomy (22.2%) & retroperitonial hematoma (11.3%). Wound infection (30.2%) was the commonest immediate post operative complication.

Key words: Blunt Trauma, Abdomen, Splenectomy, Hepatoraphy.

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Introduction

Blunt trauma abdomen is a challenging job for a surgeon especially if it occurs in children or is associated with head injury[1]. It is the main cause of death in people under 35 years of age in united kingdom[2]. Approximately 10% of patients with Blunt abdominal trauma (BAT) have persistent hypovolumic shock as a result of intra-abdominal bleeding inspite of aggressive fluid resuscitation, and only an urgent laparotomy is life saving[3]. Such patients are usually identified by the presence of abdominal distention, abdominal wall contusions, and hemodynamic instability despite initial resuscitation. Patients with primary intra-abdominal blunt injury typically survive long and benefit from initial intervention[4,5]. Most of the fatalities result due to severe extra-abdominal injuries including mainly head injury[6]. Commonest cause of blunt trauma abdomen in west is road traffic accident followed by pedestrian accidents, abdominal blows, and fall from heights[1].

Proper early diagnosis is mandatory to have a favourable outcome. Initial resuscitation is very beneficial along with CT scan abdomen to detect those patients with minimal and clinically undetectable signs of abdominal injury[3].

Material and Methods

A total of 63 patients of BAT who were managed at Govt. SMHS Hospital Srinagar from July 2000 to March 2001 (9 months duration) by the department of General Surgery were taken into the study group. All patients who had associated head injury were excluded from the study, as the expert neurosurgical services were not available at our center. However those patients who had minimal chest or orthopedic injury in the form of few rib fractures, hemothorax, pelvic fracture, or fracture long bones with hemodynamic stability were also taken up into the study group. All the case sheets of such patients were retrospectively studied and whole data was screened for various variables like age of the patients, their sex, cause of the blunt abdominal injury, signs and symptoms, operative findings, various procedures employed and associated extra-abdominal injury status.

Results

In our study design, the patient's age ranged from 8 to 61 years. Median age was 34 yrs. while the average age was 34.90376 years. The age distribution histogram is shown in Fig. 1. Regarding the sexual status of the study group, 50 patients were males and 13 were females, a M: F ratio of 3.8: 1. Commonest cause of the blunt abdominal injury was road traffic accidents followed by abdominal blows (Table -1).

Clincial commonest complaint was abdominal

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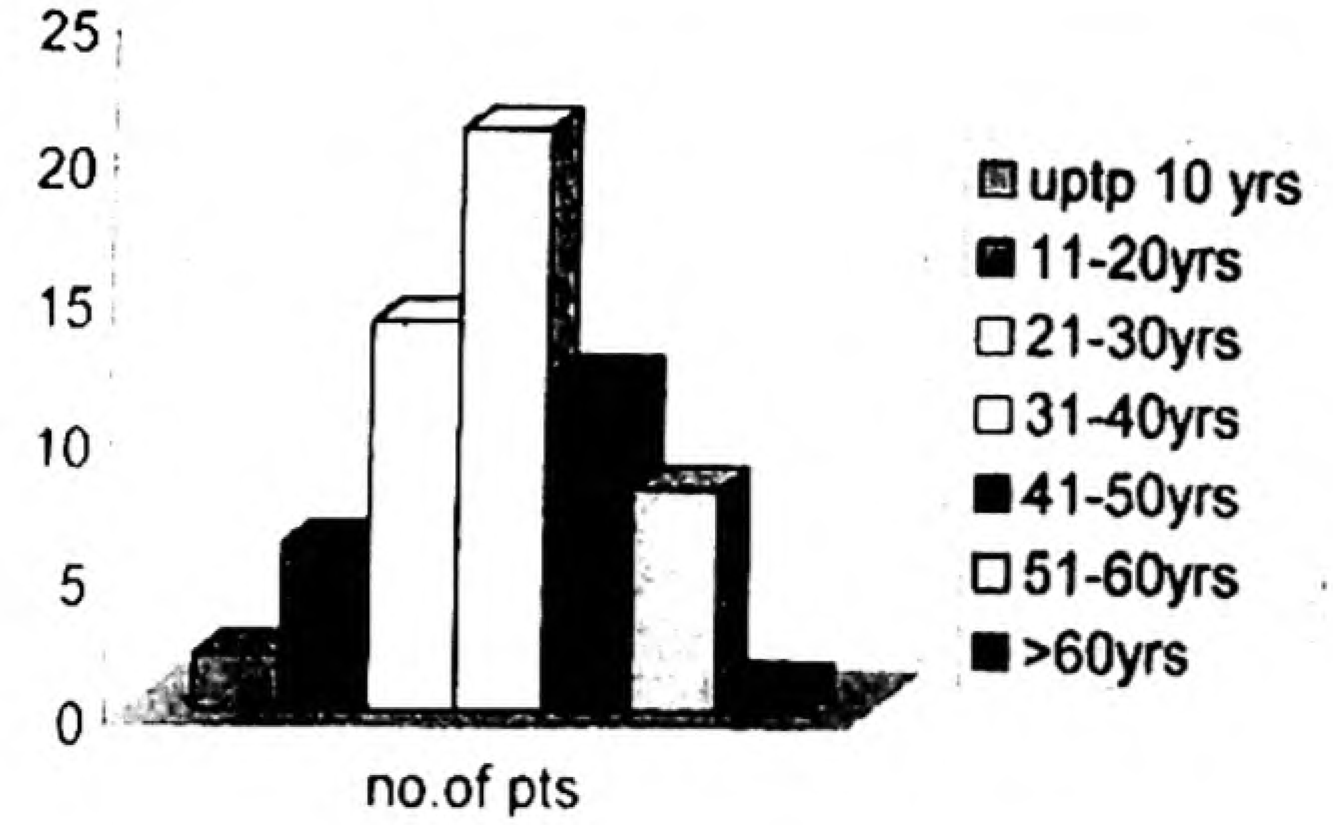

painclinicolly (71%) followed by abdominal distention (53%). Initial shock was present in 10 patients (17.4%). Out of 63 patients admitted with BAT over a period of 9 months, immediate intervention was done within 4-6 hours of admission in 55 patients (87.3%) while as remaining 8 patients (7.5%) were operated at a latter time (>24 hours of admission). In these cases hemodynamic deterioration, which resulted at a latter stage, became the indication of laparatomy.

At laparotomy, 45 patients (71.4%) had features of frank hemoperitonium while peritonitis was seen in 12 cases (19%) and in remaining 6 cases (9.5); there was minimal straw colored fluid collection. Among the 63 operated cases of BAT commonest operative finding was splenic injury (42.8%), followed by intestinal perforation (15.8%). (See Table-2). Various procedures done included splenectomy (42.8%) followed by hepatoraphy (14.2%) (See Table-3).

Other extra-abdominal injuries associated with these cases were fracture ribs alone in 11 pts (17.4%), hemothorax with or without rib fracture in 5 pts (7.9%), fracture long bones in 4 pts (6.3%), and pelvic fracture in 3 pts (4.7%). Hemothorax was managed by interocostals chest tube drainage while other bony injuries of pelvis and long bones were referred for orthopedic management.

Out of 63 resected cases, there were 9 post-operative deaths (14.2%) in our study, however there were no intra-operative deaths. Commonest cause of death was persistant irreversible shock in 5/9 deaths (55.5%) followed by Cardiopulmonary arrest in 3/9 deaths (33.3%) & Septicemia in 1/9 deaths (11.3%). Hepatoraphy amounted for 6 deaths (66.6%), splenectomy for 2(22.2%), and retroperitonial hematoma for 1 death (11.3%).

Commonest immediate post-operative complication was wound infection (30.2%), followed by Wound dehiscence (12.6%).

Table-1: Various causes of blunt abdominal trauma

S.No.	Cause of blunt trauma Abdomen	No. of Patients	%age of patients
1.	Roadtraffic Accident	38	60.4
2.	Blow to abdomen	11	17.4
3.	Fall from height	7	11.2
4.	Kick to abdomen	4	6.3
5.	Animal hit	3	4.7
	Total	63	100

Table-2: Various operative findings in the study group

S.No.	Operative finding	No. of pts	%age
1.	Splenic Injury	27	42.8
2.	Intestinal perforation	10	15.8
3.	Liver tear	9	14.2
4.	Mesenteric tear	4	6.3
5.	Colon tear	3	4.7
6.	Retroperi. Hematoma	2	3.2
7.	Ruptured Ovarian cyst	2	3.2
8.	Gastric perforation	1	1.6
9.	Duodenal perforation	1	1.6
10.	Ruptured ectopic	1	1.6
11.	Ruptured Hydatid	1	1.6
12.	Others	2	3.2
	Total	63	100

Table-3: Various Procedures Performed

S.No.	Operation done	No. of pts.	%age
1.	Splenectomy	27	42.8
2.	Hepatorhapy	9	14.2
3.	Resection anas. gut	6	9.6
4.	Mesenteric repair	4	6.3
5.	Pry. closure of int. perf	4	6.3
6.	Oopherectomy	4	6.3
7.	Colonrepair + colostomy	3	4.7
8.	RP hematoma drainage	2	3.2
9.	Others	4	6.3
	Total	63	100

Discussion

In west, motor vehicle accidents account for 75% of BAT[8]. In our series, road traffic accident accounted for 60.3% of trauma cases. This goes in accord with[2,4,5]. Most of our cases were in the age range of 3rd to 4th decade (33.4%); minimum age was 8 years while maximum was 61 years. Median age was 34 years. 79% cases were males and 21% were females with a M: F ratio of 3.8:1.

Commonest intra-abdominal injury was splenic injury followed by liver injury. Common hollow organ injury was small gut perforation. This goes in accord with[4,7,9]. The rare form of intra-abdominal injury included rupture of hydatid cyst, ovarian cyst, tubo ovarian mass, and gall bladder. Commonest procedure done was Splenectomy (42.8%), hepatoraphy (14.2%), repair of mesenteric tear (6.3%), and closure of ileal perforation (6.3%). However, in 6 patients (9.6%), resection anastamosis was done to either multiple perforations or due to gangrenous changes in the ileum. All patients with retroperitonial hematoma were associated with pelvic fractures and were not operated as they were confined to pelvic peritoneum. This is in accord with[10]. Three patients (4.7%) where primary colon repair was done with a covering defunctioning colostomy, the respective colostomies were closed after 3 months of primary surgery to maintain the colon patency.

Various extra-abdominal injuries were associated with these cases amongst which fracture rib alone was seen in 17% cases followed by hemothorax in 7.9%. All patients with head injury were excluded from study group. This goes with that in literature[2,4,5,6,10]. Most of our cases were operated immediately after admission (4-6 hrs). Our study had an overall mortality of 14.2% which goes in accord with those in literature[2,3,5].

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PREDICTIVE VALUE OF INJURY SEVERITY INDICES IN THE OUTCOME OF PENETRATING COLON TRAUMA

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Abstract; *A retrospective as well as prospective study was conducted on 72 patients who sustained penetrating colon trauma from January 1989 to December 1998. Severity of injury was evaluated by the revised Trauma Score (RTS), Injury Severity Score (ISS), Penetrating Abdominal Trauma Index (PATI) and the Flint's Colon Injury Severity Score. Complications and outcome were evaluated as a function of severity of injury. At revised trauma score of 4.21; 66.66% patients survived, while as at RTS o 7.84; survival was 100%. Similarly at ISS of <20; there was 100% survival. Post-operative morbidity was less when PATI was less than 25; and Flint colon injury score was* ≤ 2.

These results suggest that predictive value of injury severity indices should be included in trauma data bases.

Key words: *Penetrating Colon Trauma, Injury Severity Indices.*

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Introduction

Quantifying the risk of morbidity and mortality following trauma is helpful in predicting the need for extraordinary post-operative support and comparing the efficacy of treatment methods. A number of injury severity indices based on anatomic, physiology and biochemical meansurements have been described for multiple trauma patients.

The present study was conducted to determine the relationship between various injury severity indices and outcome of penetrating colon trauma at tertiary care hospital.

Material and Methods

All patients sustaining penetrating colon trauma who were operated in the Department of General Surgery at Sher-i-Kashmir Institute of Medical Sciences, Srinagar were included in this study, if they survived for atleast 24 hours after injury. Excluded from study were:

i. Patients with partial colon wall injury that did not penetrate colonic lumen.
ii. Rectal injury below the peritoneal reflection.
iii. Patients younger than 14 years of age as they were being managed by a separate paediatric surgical speciality.
iv. Patients whose records were incomplete.

Patients were stratified as per preset proformas according to:

Revised trauma score[1], injury severity score[2], penetrating abdominal trauma index[2] and Flint's colon injury score[4].

Revised trauma score as devised by Champion et al[1] incorporates the Glasgow coma score with trauma scores related to cardiovascular and respiratory systems. Variables of three organ systems that are vital to survival are combined into a single score.

The abbreviated injury score is a system of scoring based on severity of injury to different anatomic regions of the body. The ISS is a frequently used index derived from AIS and is computed by summing the squares of the three highest scoring regions. The major strengths of ISS scores are the considerations of the aggregate effect of total body injury on ultimate outcome.

Penetrating abdominal trauma index[3] is based on combined severity of injury of individual abdominal viscera diagnosed by operative examination. Each organ is assigned a number from 1-5. This is multiplied by a severity of injury estimate (1-5). The sum of individual organ score comprised the final penetrating abdominal trauma index. PATI is one of the most detailed indices relating specifically to abdominal trauma and that it has been shown to reliably predict outcome.

Flint colon severity score[4] has the advantage of marked simplicity. All colonic injuries are divided into three groups of increasing severity that are easily remembered.

We analyzed the morbidity and mortality statistics of these patients as per various injury severity indices.

Results

Seventy two patients fulfilled criterias for study, sixty two of whom were men. Mean age was 29.93 years. Injuries to these patients included 55 gunshot wounds, 14 blast wounds and 3 stab wounds.

In 34 patients colostomy was done proximal to a primary repair/primary resection anastomosis. Resection with a

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primary anastomosis was done in 17 patients. Resection with proximal segment as colostomy and distal as mucus fistula was done in 13 patients. Four patients each underwent simple oversew of colonic injury and exteriorization of perforated segment.

There were 7 deaths, accounting for mortality of 9.68%.

Revised trauma score ranged from 4.21 to 7.84. Median RTS was 7.55. Survival rate for RTS of 7.84 in our series was 100% and it was 66.66% for RTS of 4.21. This shows that RTS with its higher weight for Glasgow coma score has a direct relationship with survival probability.

Maximum number of patients were in injury severity score range of 16-20. Highest ISS obtained was 41 and lowest was 16. The injury severity score has got inverse relation with survival. At ISS of>40, the mortality was 100%. At ISS of <20, there was no mortality. Overall survival was 90.28%.

The penetrating abdominal trauma index was less than 25 in 45 patients and more than 25 in remaining 27 patients. Highest PATI obtained was 44 and lowest was 12.41. 66% of 72 patients developed post-operative complications. Breakup of PATI revealed that complication occurred in 33% of patients with PATI of <15 and 53.84% when PATI was >35.

Table-I: Post-operative complications analyzed according to penetrating abdominal trauma index.

PATI	No. of patients	No. of patients developing complications	(%) complications
6-15	3	1	33.00
16-25	42	16	38.09
26-35	14	6	42.85
36-45	13	7	53.84
Total	72	30	41.66

As per Flint's grading of colon severity, 34 patients belonged to Grade II, 32 to Grade III and only 6 patients were categorized as Grade I.

33% of Grade I patients developed complications, while as 35.29% of Grade II, and 50% of Grade III injuries developed various post-operative complications. Mortality was 8.82% and 12.5% for Grade II and Grade III injuries.

Tabel-II: Showing morbidity and mortality vs Injury grade as per Flint et al.

Grade of injury (Flint et al)	No. of patiens	Patients developing complications	Mortality
I	6	2(33%)	0
II	34	12(35.29%)	3(8.82%)
III	32	16(50%)	4(12.5%)
Total	**72**		**7(9.68%)**

Discussion

Colon trauma both accidental and willful has become common in this era of increasing violence. There has been a remarkable increase in incidence of colon trauma in Kashmir valley during recent years. The primary focus of this study was to determine the relationship between injury severity indices and outcome of colon trauma of penetrating nature. The indices studied in our study were revised trauma score, injury severity score, penetrating abdominal trauma index and Flint's colon scoring system. Each is discussed in following sections:

Revised Trauma Score

RTS at the time of admission was calculated in all 72 patients. Analysis revealed that RTS of 7.84 was found in 31.94% of patients. Revised trauma score has a direct relationship with survival probability.

Champion HR et al in his study confirms the ability of physiological measures to identify patients at risk. The revised trauma score was shown to provide a reliable predicitivity of survivors; although more in case of head injuries.

Injury Severity Score

We observed that 43 patients belonged to ISS range of 16-20, followed by ISS of 21-25 in 20 patients. There was no death at ISS of <20, and 2 deaths each at ISS range of 21-25, 31-35, and 36-40. However, no death occurred at ISS range of 26-30.

Low mortality rate at ISS of <20 was explained by the fact that injury severity score had a direct relationship with mortality rate and was a reliable anatomical measure of a given injury. As there was no mortality at ISS range of 26-30, this can be explained by prompt resuscitative measures in emergency department. These patients belonged to local catchment area and so were able to report instanteously.

Nelkan and Lewis[5] found that ISS was important department regarding outcome of colon trauma. They found that at ISS of <25, 12% of patients developed complications who were managed by primary repair as apposite to 44% complication rate associated with colostomy.

Penetrating Abdominal Trauma Index

Analysis of PATI revealed that post-operative complications occurred in 33% of patients with PATI of <15 and 53.48% of patients when index was >35; illustrating that PATI has a direct correlation with post-operative morbidity.

Our results were almost statistically same as published by Shannon et al[6] who in a study of 228 patients of penetrating colon trauma found that septic complications were more common when PATI was more than 25.

Controversial to that observed by Shannon et al, Demetriades et al[17] found that PATI has no value in determining the type of operation and the morbidity. Of five patients who developed complications in their series, three had a PATI of less than 25.

Flint's Colon Severity Scoring

In our study 33% of Grade I, 35.29% of Grade II, and 5% of Grade III patients developed various post-operative complications. While as mortality was 8.82% and 12.5% in grade II and grade III injuries respectively.

As per Flint et al[4] morbidity in their series was 20% and 31% in grade II and grade III injuries respectively. There was 4% mortality in grade I injuries, 20% in grade II injuries and 25% in grade III injuries.

The conclusions which were drawn from this study were that:

i. Revised trauma score has direct correlation with survival i.e., more the score better the survival.
ii. Injury severity score has indirect correlation with survival. i.e., more the ISS , less the percentage of survival.
iii. Flint's classification of colon severity has a good predictive value in determining outcome of colon trauma management.

So we recommend that all these injury severity indices should be included in colon trauma data bases.

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AN EXPERIENCE WITH ABDOMINAL TRAUMA IN ADULTS IN KASHMIR

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Abstract: *An analysis of 144 (69 prospective and 75 retrospective) abdominal trauma victims is reported. This study was undertaken in response to increasing violence in Kashmir. The purpose of the study was to find out the incidence and etiology of abdominal injuries; to determine the relevance of Revised Trauma Score to prognosis and management, and find out scope of various surgical techniques.*

Penetrating injuries were seen in 52.77% and non-penetrating in 47.23% patients. Gun shot injuries and falls accounted for 77.65% and 51.48% of penetrating and blunt injuries, respectively. Male: Female ratio was 4.4 : 1 and 3:1 for penetrating and non-penetrating injuries, respectively. 29.10% patients had splenectomy, 12% had small gut resection and anastomosis. 2.08% had colonic resection with primary anastomosis of right colon, 2.77% had right hemicolectomy; 6.69% had exteriorization; 1.3% had colostomy with mucous fistula; 6.25% had nephrectomy; 9.72% had gastric repair; 10.41% had diaphragmatic repair; 10.51% had liver repair and 7.63% had negative lapartomy. Wound sepsis was the most common complication. Mortality rate was 9.2% and 8.2% in penetrating and non-penetrating injuries, respectively. Revised Trauma Score reflected the sevrity of head injury. Major cause of the death was irreversible shock due to uncontrolled hemorrhage. Trauma being a preventable disease, rapid transportation, prompt rescucitative measures and modern technical skills seem to be primary determinants of severity and mortality in trauma victims.

Key words: *Trauma, trauma score, injury score, triage, lapartomy, diagnosis, mortality.*

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Introduction

Trauma is the most common cause of death in the age group of 15-45 years[1]. Surgeons are called upon to render initial care to the victims of traum and the speed and accuracy with which life threatening complications of trauma are dealt with, has a paramount impact on the quality and duration of survival. We have untertaken the present study in respone to the steep rising trend of trauma, especially gun shot injuries in Kashmir. Abdomen is the third most common injured region with injuries requiring surgery in about 25% of civilian trauma victims[2]. The type of the injury and the life survival is related to geographical distribution, race, religion and other social factors. Blunt trauma poses a difficulty in diagnosis and accounts for higher motality. Gun shot and blast injuries have highest mortality. There has been tenfold increase in terrorist activities around the world over past two decades. So, it is of utmost importance for medical personnel to be well versed with the management of such victims. Pre-hospital transportation, initial assessment; thorough rescuscitative measures and correct diagnosis are of paramount importance. Policy of prioritization (Triage) requires regimented approach and identifies the victims who need prompt care. Trauma scoring system are of vital importance in identifying the fatal injuries, especially when a surgeon encounters mass causalities.

Material and Methods

This study was entirely hospital based and was carried out in the department of General Surgery, SKIMS, Srinagar (Kashmir). It did not represent the overall spectrum of trauma victims. Most of the patients were managed at the other hospitals of the valley. Patients in pediatric age group were excluded from the study. The records of 75 patients in retrospective group (January, 1983 to April, 1991) were reviewed and analysed for the injuries. However, prospectively, from May, 1991 to June, 1995 a total of 447 patients were admitted in the Emergency ward and screened for abdominal and extra-abdominal injuries. 224 victims had blunt trauma, 187 had bullet injury and 28 patients had blast injury. 3 patients had bull horn injury, 2 had stab injury; 2 had iatrogenic trauma and one was miscellaneous. 40 victims of diffuse soft tissue injuries inflicted during physical torture by security forces, were proved to have acute renal failure secondary to rhabdomyolysis. They were screened for intra-abdominal injuries and managed by nephrology department and excluded from our study. 207 patients who remained stable after72 hours of admission, were discharged and excluded. 97 patients were brought dead and excluded from

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the study. A total of 144 cases (68 and 76 cases with blunt and penetrating injuries, respectively) was selected for study.

Baseline investigations were carried out after resuscitation in all patients. Abdominal and thoracic radiography was performed in 119 victims. X-ray skull, X-ray spine; X-ray pelvis and X-ray limbs were done in relevant cases. Abdominal ultrasound was done in 52, CT scan abdomen in 16; intravenous pyelography in 14; CT scan skull in 32; CT scan thorax in 7; carotid angiography in 6 and myelogram in 4 cases.

Table-I: Age Distribution in Abdominal Trauma (Adult Population)

Age group (Years)	Penetrating No.	%	Non-Penetrating No.	%	Total No.	%
15-20*	25	32.89	26	38.23	51	35.41
21-30*	25	32.89	26	38.23	51	35.41
31-40	19	25.2	9	13.25	28	19.48
41-50*	3	3.94	3	4.41	6	4.16
51-60*	2	2.63	4	5.88	6	4.18
61-70*	2	2.63	-	0.00	2	1.38
Total	**76**	**100.00**	**68**	**100.00**	**144**	**100.00**

** Commonest target age groups included 2nd and 3rd decades of life especially in gun shot injuries.*

** Upper extreme of age was least affected*

Four quadrant abdominal paracentesis was done in every blunt trauma patient and those with missile injuries without external wound, suspected to have visceral injuries. Revised Trauma Score and Injury Severity Score were noted down in each victim. Diagnostic peritoneal lavage was done in those who had equivocal results during paracentesis. Criteria for laparotomy were laid and results analysed after surgery.

Table-IIA: Penetrating Trauma and Etiology

Mechanism	No. of cases	%
Bullet injury	59	77.65
Blast injury	9	11.84
bull horn injury	3	3.94
Stab injury	2	2.63
Miscellaneous	1	1.31
Iatrogenic	2	2.63
Total	**76**	**100.00**

Table-IIB: Blunt Trauma and Etiology

Mechanism	No. of cases	%
Falls	35	51.48
Vehicular accidents	29	42.64
Physical assaults	2	2.94
Miscellaneous	2	2.94
Total	**68**	**100.00**

Results

Trauma abdomen is a disease of young age but no age group is exempted. Second and third decades of life were mostly affected (76.4% in blunt trauma and 67.5% in penetrating trauma) (Table I). Mean age was 29.97 years. Males were affected more often than females with a ratio of 4.4:1 and 3:1 for penetrating and non-penetrating injuries, respectively. The incidence has undergone a striking change since 1989. Penetrating trauma in Kashmir was rare before 1989. There has been ten-fold increase in its incidence from 0.06% in 1989 to 0.56% of total admissions in 1992, with a peak incidence of 0.78% in 1990 in relation to the blunt trauma (two -fold increase). Penetrating injuries constituted 52.7% of cases in relation to 47.2% of blunt injuries.

Table-III: Clinical Presentation of Abdominal Trauma

Presentation	Penetrating No	%	Non-Penetrating No	%
Brought dead	53	41.08	-	-
Pain abdomen*	76	100.00	62	91.17
Bleeding from wound site	72	94.73	60	88.23
Hemoperitoneum*	69	90.78	60	88.23
Vomiting*	52	68.42	56	82.35
Shock*	35	46.05	29	42.64
Dyspnoea*	28	36.84	16	23.52
Evisceration**	17	22.36	-	-
Hematuria	13	17.10	10	14.70
Paraplegia	9	11.84	5	7.35
Hemothorax	8	10.52	5	7.35
Hematemesis	6	7.89	2	2.94
Pneumothorax*	6	7.89	4	5.88
Coma*	5	6.57	5	7.35
Bleeding PR	3	3.94	-	0.00
Miscellaneous	2	2.63	1	1.47

** More than one feature was seen in a single patient.*

*** Evisceration presented only in penetrating injuries (22.36%)*

Gun shot injuries accounted for 77.65% of penetrating type (Table IIA). However, falls from variable heights accounted for 51.48% of blunt injuries (Table IIB). Clinical presentation in penetrating injuries was usually straight forward with penetrating wound as the commonest mode (94.70%). However, absence of external wound did not rule out visceral injury, especially in blast and blunt injuries. Hemoperitoneum was the most common mode of presentation in blunt trauma (88.23%) (Table III).

Initial Hb% had no relevance to severity of injury. Leukocytosis had inverse relation with Hb%, typically seen in liver and splenic injuries. Urinalysis was a reasonable indication of lower urinary tract injury. 42.8% of renal injuries had haematuria in contrast to 100% in bladder and urethral injuries. Serum amylase level was a non specific investigation. 3 to 7 cases (42.8%) with pancreatic injuries had significant raised amylase levels (>500 S. units).

Role of radiography in penetrating injury was limited. 7 of 9 blast injury cases had missile shadows. Amongst 62 of blunt injury cases 37 had negative X-ray abdomen. Out of

48 gun shot injury cases, bullet shadow was seen in 22 cases. Gas under diaphragm was seen in 3.5% and 3.2% of penetrating and non-penetrating injuries in presence of gut perforation. Paracentesis abdominis was positive in 96.6% of blunt and blas injuries. Revised Trauma Score had an inverse relation with mortality rate but reflected more so the severity of head injury than the visceral injury. Injury severity score had a direct relation with mortality rate. The highest score was 68 and the lowest score was 8.

Table-IV: Associated Injuries

Associated injury	Penetrating (n=76)		Non-penetrating (n=68)	
	No.	%age	No.	%age
Soft tissue injury*	29	38.16	17	25.00
Head injury*	14	18.42	21	30.88
Lung contusion*	13	17.11	07	10.29
Hemothorax*	09	11.84	08	11.76
Pneumothorax*	06	07.89	04	05.88
Spinal fracture*	09	11.84	05	07.35
Pelvic fracture*	08	10.53	04	05.88
Radius fracture	05	06.58	08	11.76
Rib fracture*	04	05.26	11	16.18
Ulnar fracture	03	03.95	-	-
Femur fracture	02	02.63	02	02.94
Scapular fracture	02	02.63	-	-
Facio-maxillary trauma	02	02.63	-	-
matacarpal fracture	01	01.31	-	-
Humerus frcture	-	-	03	04.41
Sacro-iliac joint dislocation	-	-	01	01.47

**More than one injury seen in the same patient.*

Poly trauma was frequent in both types. Associated injuries were seen in 90 of 144 victims. Head injury was the commonest associated injury in blunt trauma (30.8%) and soft tissue injury was the commonest associated injury in the penetrating group (38.1%) (table IV). Transverse colon was involved in 28.95% of penetrating injuries, spleen in 48.5% of blunt injuries (Table V). Class II and III liver injuries were seen in 25 of 33 cases. resection, primary end-to-end anastomosis was performed in 60% cases of small gut injuries and resection, primary end-to-end anastomosis with proximal colostomy in 36% of colonic injuries. Splenectomy was required in 42 of 44 cases of splenic injuries. Delayed splenic rupture was not seen. Post-splenectomy sepsis was seen in none. Liver repair was done in 26 cases, primary repair of diaphragm in 15 and nephrectomy in 9 cases. Diaphragm was seen to be commonly injured in penetrating[13] against blunt trauma[2] cases. Wound sepsis was seen in 17.11% and 5.88% of penetrating and blunt injuries (Table VI). Majority of the patients required multiple blood transfusion. Disseminated intravascular coagulation related to massive blood transfuion was seen in one patient. Mortality rate was 9.2% and 8.8% for penetrating and blunt injuries, respectively. Irreversible shock was the most common factor of mortality.

Table-V: Organ Distribution

Organ	Penetrating (n=76)		Non-penetrating (n = 68)	
	No	%	No	%
transverse colon*	22	28.95	06	08.82
Ileum	20	26.31	07	10.29
Retoperitoneum*	19	25.00	15	22.06
Liver*	16	21.05	17	25.00
Stomach*	14	18.42	03	04.41
Kidney*	14	18.42	09	13.23
Diaphragm*	13	17.10	02	02.94
Spleen*	11	14.47	33	48.53
Mesentery	10	13.15	04	05.86
Descending Colon*	08	10.53	02	02.94
Jejunum*	08	08.21	04	05.88
Sigmoid colon*	07	09.21	02	02.94
Ascending colon*	07	09.21	02	02.94
Urinary bladder	05	06.58	05	07.35
Pancreas	03	04.95	04	05.88
Caecum*	03	03.95	01	01.47
Rectum	03	03.95	--	--
Duodenum	02	02.63	02	02.94
Gall bladder	02	02.63	02	02.94
Ureter	02	02.63	--	--
Uterus	02	02.63	--	--
Appendix	02	02.63	--	--
Suprarenal gland	01	01.37	01	01.47
Ovary	01	01.31	--	--

**More than one organ was frequently injured in the same patient.*

Table-VI: Complications in Abdominal Trauma

Organ	Penetrating		Non-penetrating		Total	
	No	%	No	%	No	%
Wound sepsis	13	17.11	4	5.88	17	11.80
Wound dehiscence	7	9.21	3	4.41	1	6.94
Septicemia	5	6.58	1	1.47	6	4.16
Urinary tract infection	5	6.58	2	2.94	7	4.86
Bed sores	5	6.58	3	4.41	8	5.56
Intestinal obstruction	3	3.95	1	1.47	4	2.72
ARDS*	3	3.95	1	1.47	4	2.72
Fecal peritonitis	3	3.95	-	0.00	3	2.08
Pneumonitis	2	2.63	1	1.47	3	2.08
Intestinal fistula	2	2.63	-	0.00	2	1.39
Postoperative jaundice	2	2.63	-	0.00	2	1.39
Pancreatitis	1	2.63	1	1.47	2	1.39
Meningitis	1	1.32	-	0.00	1	0.69
DIC**	1	1.32	-	0.00	1	0.69
Liver failure	1	1.32	-	0.00	1	0.69
Anastomotic leak	1	1.32	-	0.00	1	0.69

** Adult respiratory distress syndrome*

*** Disseminated intravascular coagulation*

Discussion

Trauma to the victim has become more common in this era of violence, automobile and industrial accidents. There has been a remarkable increase in the trauma in Kashmir too. Successful management of severely injuried patients is predicted upon to major principles i.e., early definitive management and comprehensive care from onset to the return of normal activities of daily life. Primary focus of our study was to know the clinical manifestation, role of investigative protocol and the outcome of requisite treatment at the earliest.

Penetrating injuries were rare before 1989. However, the commonest mode of injury was blunt trauma. Injuries due to criminal activities were more of a historical significance only. In 1985 the incidence of abdominal trauma was 0.021% of total hospital admissions (blunt injuires only). However, steep rise in penetrating injuries (0.78%) was seen in 1990 due to civilian violence during freedom struggle. Highest (0.78%) was seen in 1990 due to civilian violence during freedom struggle. Higest incidence was seen in second and third decade (15 to 30 years). Lowe et al[3] has reported similar results in his study. Berman et al[14] and Bouwman et al[5] have reported consistent results. In our study the etiology of trauma was varied. Majority of the gun shot injuries were historically inflicted by security forces. Blast injuries constituted 11.84% of penetrating injuries. Chau et al[6] and Feliciano et al[7] have reported similar results. Clinical presentation was variable. Deep penetrating wound was seen in 59 cases of 75 penetrating injuries. Wound of entry was smaller than the exit size. The size of the entry wound did not have any correlation to the severity of internal injuries 1 of 75 patients had a minute external injury. However, on observation the patient deteriorated and was taken for surgery. He was proved to have extensive gut injuries. Another patient had no external wound but on exploration he had a jejunal and colonic perforation. Evisceration was seen in 17 of 76 penetrating injuries. One pregnant woman had evisceration of spleen and colon. Shaftan[8] in a study of 115 patients had demonstrated an incidence of 6.09% of evisceration.

Initial hemoglobin level was of limited value in determining the hemodynamic stauts of trauma victims. However, a falling Hb% was diagnostic of blood loss. Majority of our patients (60) had Hb level of 8-10gm%. 23 patients (17.36%) had >12 gm% and still 10 of 23 patients with >12 gm% had shock. Berman et al[4] correlated Hb values with leukocyte count and found that increase in leukocyte count was proportional to fall in Hb. In our study leukocyte count of >15000/mm^3 was associated with liver and splenic injuries, the observation being consistent with that of Berman[4]. However, a normal count did not change the modality of treatment. Serum amylase estimation was non-specific. Among 69 cases serum amylase level was raised in 20(28.96%) patients. Of 69 only 7 had injured pancreas. 3 of 7 (42.8%) cases with injured pancrease had increased serum amylase level. Nick et al[9] reported similar results. X-rays did not provide much help in diagnosis. Only 3.35% of 59 victims with gut perfoation had evidence ofpneumoperitoneum on radiograph. The role of radiograph was limited to locate the path and anticipating the possible visceral injuries. None has gas under diaphragm in 180 patients of Shaftan[8].

Paracentesis abdominis in our study had a sensitivity of 96.6%. Giacobine & Siler[10], Williams and Zollinger[11] reported a sensitivity of 80% and 70%, respectively. Diagnostic peritoneal lavage was done only in insignificant number of patients. Brittain[12] reproted 33 false negative paracentesis in 51 patients of blunt liver trauma. Cerise and Scully[13] noted an accuracy of 80% only. Freeark and associates[14] emphasized that a dry tap has no significance and must be correlated clinially. Negative tap is not a contraindication for exploration in presence of trauma and clinical signs. The commonest mechanism of trauma in our study was fall from trees and multistoreyed buildings in non-penetrating group and bullet injury in penetrating group which is in contrast to other studies.

Transverse colon alone was the commonest organ injured (28.95%) in penetrating injuries, followed by ileum (26.3%); liver (21.05%); stomach (18.42%); kidney (18.4%); spleen (17.4%); diaphragm (17.10%); urinary bladder (6.58%) and pancreas (3.95%). Lowe et al[3] in an analysis of 253 patients of gun shot injuries reported liver as commonest organ (105 of 253), small bowel in 82 of 253; colon in 79; stomach in 54; diaphragm in 44; kidney in 44; spleen in 30; pancreas in 21; duodenum in 18; bladder in 11 rectum in 9.

In 68 patients of blunt traum in our study, spleen alone remains the most common organ injured (48.53%), followed by lvier (25.0%); retroperitoneum (22.0%); kidney (13.33%); ileum (10.29%); transverse colon (8.82%); urinary bladder (7.35%); pancrease (5.88%); stomach (4.41%); duodenum (2.94%) and gall bladder (2.94%). Fitzgerald et al[15] in 200 cases of blunt trauma reported liver injury in 52.5%, spleen in 46.5%; small bowel in 9% diaphragm in 8.0%; colon in 5% kidney in 4.5%; bladder in 4% and IVC in 1%.

Associated injuries in the penetrating variety in our study included soft tissue injury in 38.6% followed by head injury (17.11%), chest injury in 17.11%; spinal fracture in 11.8%; pelvic bone fracture in 10.53%; radial fracture in 6.5% and ulnar fracture in 3.95%. Graham et al[16] in an analysis of 68 patients with penetrating injuries reproted chest injury as the most common associated injury, followed by head injury and spinal injury.

In an analysis of 68 cases with blunt injuries, we report associated head injury in 30.38% of patients, rib fracture in 16.18%; radius fracture in 11.76%; hemothorax with or without rib fracture in 11.76%; lung contusion in 10.29% and spinal fracture in 7.35%. Cerise and Scully[13] have reported identical results of associated injuries in 20 patients. However, Fitzgerald et al[15] has reported higher incidence of

Clinical Profile of Trauma Abdomen.

associated injuires in 200 cases of blunt trauma in which 97% had associated injuries, chest injury being the commonest (54%).

We treated splenic injury by splenectomy in 42 cases and splenorraphy in 2 cases. Gastric repair was done in 14 cases, partial gastrectomy in one case, small gut repair in 11; resection and primary anastomosis in 18, and resection and anastomosis with ileostomy in 1 case. Large gut repair was done in 4, resection and primary anastomosis of right colon in 3; resection and anastomosis with colostomy in 9; resection, and primary anastomosis with colostomy of left colon in 2; right hemicolectomy in 4; exteriorization in 1; and repair, colostomy and mucous fistula in 2. Rectum was primarily repared in none but repair and colostomy was done in 3 cases. Diaphragm was repaired in 15 cases without prosthesis, liver repair in 26; resection and repair in 3; resection and hepatic artery ligation in 2 and resection and perihepatic packing in 2 cases. One patient who had hepatic artery ligation, died due to septicemia. Kidney repair was done in one, partial nephrectomy in 2; nephrectomy in 9; pancreatic reapir in 3 of 7 patients; local pancreatic resection in one and cholecystectomy in 2 patients. Hysterectomy was done in 2 cases of post-dilatation and curettage uterine injury. Both had extensively lacerated uterus which called for removal of uterus. Ureter was repaired in 2 patients. Negative laparotomy was seen in 11 cases (7.73%). In contrast, Lowe et al[3] in study of 1513 cases, found an incidence of 16.19% of negative laparotomy.

Demetriades et al[17] in a study of 100 patients with bullet injuries of colon has shown encouraging results with primary colonic repairs and discredited old dogma that primary repair is safe only in right colon that the left colon. He stressed that no distinction should be made between the two. He performed primary repair in 88% of penetrating wounds (highest rate reported in the literature). He emphasized that primary repair should be avoided only in cases where colon is severely injured and grossly contaminated with fecal matter. Our observations are not different from their results.

Flint and Polk[18] concluded in a analysis of 540 patients of hepatic injury that bleeding is controlled by selective hepatic artery ligation. Its failure may be due to venous bleeding as the cause or wrong arterial ligation. Mucher Peter et al[19] managed 196 cases of acute splenic injuries. 59.7% had splenectomy, 16.3% splenoraphy and 24% had conservative treatment.

62.5% of patients in our study had extra-abdominal injuries. Thoracostomy was done in 13 of 28, lung repair in 5 of 28 with thoracic trauma; lung resection in 8 of 28; brain resection in 7 of 12; drainage of intracranial haematoma in 5 of 12; laminectomy and bullet extraction in 5 of 13; spinal fusion in 8 of 13; closed reduction for long bone fractures in 16 of 21 patients; open reduction in 5 of 21 and vascular repair in 7 of 14 cases.

In our study, wound sepsis prevailed as the most common complication especially in penetrating injuries with gross contamination. Wound dehiscence was more in penetrating type. One patient of shot gun blast had dehiscence of whole abdominal wall, which was treated with bilateral Latissimus dorsi myocutaneous flap). Beall et al[20] reported an incidence of 11.3% of wound sepsis, fistulae in 6.7% peritonitis in 8.6% and wound dehiscence in 1.23%. Howell et al[21] in an analysis of 19 cases of colonic injuries, reported 63% incidence of complications. Wound sepsis was seen in 52.3%, followed by upper GI bleeding in 10.52% wound dehiscence and evisceration in 5.2%; anastomotic leak in 5.2% and pancereatitis in 5.25% of his patients.

Revised Trauma Score (RTS) recorded in every patient of prospective group (69 patients) in our study, revealed that majority (84.06%) had a score of 20-23. Mean RTS was 21.30 and 20.95 for 49 and 20 patients of penetrating and non-penetrating injuries respectively. p value was >.20, and the mean variation was statistically insignificant. RTS had an inverse relation with the mortality rate but it was invariably a prediction of head injury. Champion et al[22] confirmed the ability of physiological measures to identify the patients at risk. RTS <11 identified 97.2% of fatally injured patients and RTS was shown to provide reliable predictability of survivors although more in cases of head injury.

Mortality rate has declined from 53.5% during world war I to 25% in world war II, 12% in Korean war and 8.5% in Vietnam conflict[23,24]. We report a mortality rate of 9.03% and all the patients had celiotomy. 7 patients died with severe penetrating injury and 6 died with blunt injury. Out of 9 blast injury victims 2(22.2%) died. Both had severe injuries and developed Adult respiratory distress syndrome during postoperative period. Irreversible shock due to uncontrolled hemorrhage was the cause in other cases of injuries (46.15%). Major liver trauma was an important mechanism of higher mortality in both types. Mortality rate was 22.2% for blast injuries (highest) and 8.4% for gun shot injuries. Everard[25] reported a mortality rate of 25% in 87 patients of blunt abdominal trauma. Beall et al[20] reported overall mortality of 13.6%, 15% for gun shot injuries and 1.8% for stab injuries

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ENDOSCOPIC MANAGEMENT OF BILE DUCT LEAKS

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Abstract: *Bile leaks are well known complication of hepatobiliary surgery. The present study describes the value of combined endoscopic and radiologic techniques in the management of bile duct leaks after hepatobiliary surgery in 12 consecutive patients evaluated over a 32-month period. Fistulation occurred after cholecystectomy in 10 patients, with choledcholithotomy in 3 and after operations for hydatid cysts of the liver in 2 patients. Endoscopic retrograde cholangiography was performed 3 –21 days after operation and demonstrated the site of leak from the cystic duct stump in 6 patients, the common hepatic duct in 1, the common bile duct 3, and intrahepatic duct in 2. Two patients had concomitant biliary stones. Overall, 9 of the 12 patients (75%) were treated by endoscopic and ultrasonographic interventional procedures and the other 3 who had complete transection of the bile duct were treated by surgery. Endoscopic therapeutic procedures included sphincterotomy in 9 patients, endoprosthesis placement in 7, biliary stones extraction in 2, biliary stricture dilatation in 1, and percutaneous abscess or biloma drainage under ultrasound guidance in 6. Complete clinical improvement and healing of bile leaks were achieved in all 9 patients. Two patients developed minor complications as a result of endoscopic procedures. The results show that the combination of endoscopic with radiologic interventional techniques offers a safe, rapid and effective approach for the management of postoperative bile duct leaks.*

Key words: *bilary, lekage, spincterotomy.*

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Introduction

Bile duct fistula or leak is an infrequent but serious disorder that develops in the great majority (95%) after hepatobiliary surgery[1-3]. Biliary injury is reported to occur in 0.1 to 0.2% following open cholecystectomy[4], and has been seen in 0.5 to 2.9% after laparoscopic cholecystectomy in recent large series[5-8]. Occasionally bile duct fistulas develop after hepatic resections, surgical drainage of liver abscesses or hydatid cysts, peptic ulcer disease, biliary calculi, stricture or parasites and traumatic injuries of liver[1-3,9-11].

Previously, such leaks were treated surgically but re-operation in such patients who are often critically ill is difficult because of inflammation, infection and adhesions. Also, re-operation has been associated with high morbidity and mortality at rates of 22 to 37% and 3 to 18%, respectively[12-15]. In recent years, endoscopic procedures aiming at improving biliary drainage have been shown to treat this complication effectively and safely, eliminating the need for re-operation[1-3,16]. This paper summarizes our experience in 12 consecutive patients with bile leaks of varied etiologies. The type of injuries involved, the techniques involved, and results of coordinated endoscopic, percutaneous and surgical management will be discussed.

Material and Methods

Between October 1998 and May 2001, 12 patients (4 men and 8 women) with iatrogenic biliary leakage were evaluated in our department. Their ages ranged from 27 to 68 years (mean, 41.9 ± 13.9 years). Seven patients had undergone cholecystectomy (open, 5 and laparoscopic, 2), 3 had undergone cholecystectomy and the common bile duct exploration; and 2 had undergone surgery for uncomplicated hydatid cysts of the liver.

Clinical presentations included persistent biliary-cutaneous fistulas, 7 patients; progressive jaundice, 6; postoperative abdominal pain, 7; and cholangitis, 2. Many patients presented with a combination of symptoms (table 1). The bile was flowing from surgical drains in 4 patients; from a T-tube track in 2 patients; and through cutaneous wound in 1 patient. The quantity of biliary leakage ranged from 50 to 550 ml per day. The mean interval between hepato-biliary surgery and diagnosis of a bile leak was 9.9 ± 3.3 days (range 3-21 days). Patients were referred to this hospital at a median of 10 days (range, 2 – 19 days) after the primary operation. The white blood cell count was

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elevated in 8 patients. Alkaline phosphatase was elevated in 9 patients (75%) and ranged from 100 to 715 U/l at presentation (mean, 308 U/l). Serum bilirubin was raised in 8 patients (66.7%) and ranged from 11 to 360 mmol/l (mean, 61 mmol/l). All patients had at least one abnormal liver chemistry.

Ultrasonography was performed in all the patients and showed biliary dilatations in 5 patients, and fluid collections in the gallbladder fossa or in the perihepatic region in 7 patients. These collections were 3 to 7 cm in size and were anechoic (5 patients) or complex (2 patients); the latter 2 collections were infected. CT scan was performed in 4 patients and discovered one additional collection in one patient in whom US was technically inadequate. Intraperitoneal fluid collections were demonstrated using CT of the abdomen and/or abdominal ultrasound in 7 patients. The diagnosis of bile leak was made by ERCP in all cases. Sphincterotomy, nasobiliary drainage or placement of endobiliary stent was then performed according to the results of ERCP and clinical status. Sphincterotomy was performed to remove bile duct stones, to insert 10-Fr stent to bridge a large fistula, or to promote biliary drainage by eliminating pressure gradient between the common bile duct and duodenum to treat BDF. Prophylactic antibiotics were routinely administered prior to endoscopy to prevent sepsis. Stent removal was performed after 6 weeks of the initial endoscopic treatment.

Results

The ERCP was successfully performed in all patients. Retrograde cholangiography showed extravastion of the contrast material from the following sites: cystic duct stump in 6 patients; the common hepatic ducts in 1 patient; the common bile duct in 3 patients; and segmental intrahepatic hepatic duct in 2 patients. The latter 2 patients (cases 5 and 10) had undergone surgery for uncomplicated hepatic hydatid cysts. The bile duct was amputated or completely transected at the level of the middle of the common bile duct in 3 patients (cases 6, 9 and 12). Two patients had concomitant bile duct obstruction distal to the site of the biliary leakage due to the retained common bile duct stones. Except for patients with amputated extrahepatic bile duct endoscopic therapy was attempted in all other 9 patients. Three patients with the complete transection of the CBD underwent hepaticojejunostomy with Roux-en-Y loop.

Both the patients with segmental intrahepatic biliary leakage were treated by sphincterotomy alone and both recovered successfully. External fistulas disappeared rapidly within 4-6 days. The other 7 patients with cystic or hepatic duct leak underwent sphincterotomy followed by placement 10-Fr polyethylene endoprosthesis (Wilson Cook, Boston). Associated retained stones in 2 patients were successfully extracted. The collections were drained by percutaneously inserted catheters under ultrasound-guidance. Clinical symptoms improved in 5 to 12 days. Bile secretion through the drains or wounds decreased after treatment and stopped within 3 to 12 days in all patients. The stricture was observed in one patient at the site of bile duct injury after stent removal; the stricture required balloon dilation.

Complications related to endoscopic procedures included bleeding in one patient and pancreatitis in one. Both the patients recovered after supportive therapy. One patient died from septic complications and pulmonary embolism 35 days after laparoscopic cholecystectomy and 16 days after hepaticojejunostomy. The remaining 11 patients were asymptomatic with normal clinical examination, laboratory data, and abdominal ultrasonography 3 to 31 months after endoscopic therapy.

Discussion

The present study showed that combined percutaneous and endoscopic interventional techniques offer unprecedented opportunities for the management of bile duct leaks and their complications that are detected after hepatobiliary surgery. Overall, 9 of 12 patients (75%) were treated successfully with these techniques. These techniques provided many benefits. First, ERCP was an excellent method for delineating the anatomy of the bile ducts and the site of biliary leakage and associated calculi that were present. Second, endoscopic treatment, including sphincterotomy and subsequent stone extraction if needed, with or without endoprosthesis placement, resulted in healing of leaks which obviated need for additional surgery. Also, retained calculi in the CBD and biliary strictures were successfully treated by endoscopic methods. Third, percutaneous catheter inserted under US-guidance successfully drained perihepatic abscesses or bile collections in all patients. Fourth, patients in whom a definitive surgery was needed, these procedures would allow for interim control of infection and inflammation. Also, a stent placed in an injured bile duct provides the surgeon with intraoperative landmark for biliary reconstruction, if surgery becomes necessary. This is of value at re-operation when adhesions and inflammation obscures the view of extrahepatic biliary tree. Fifth, the complications of these procedures are very low. Therefore, these interventional techniques have been a significant advance in the management of these patients with bile leaks.

Another effective non-surgical method for the management of bile leaks is the percutaneous transhepatic cholangiography and biliary drainage[17]. However, this may be technically difficult since bile ducts are usually not dilated even in the face of distal obstruction because of effective decompression in patients with bile leaks through the fistulas. The retained stones in the CBD may be difficult to extract by such a method. The major complications, however, are

Table 1: Data on 12 patients with bile duct injury managed by combination of endoscopic procedures and ultrasonography or surgery.

Case no	Age, sex	Presentation	Interval between hepatobiliary surgery-ERCP (days)	Investigations				ERCP findings	Treatment
				WBC /cmm3	Bilirubin mg/dl	ALT in/1	ALP iu/1		
1	27, M	Biloma, pain	21	8700	11	34	145	CD leak	EBS
2	35, M	Biloma, pain, jaundice	11	12600	12	29	123	CHD leak	PDB. EBS
3	31, F	Pain, jaundice	14	13400	18	44	157	CD leak	EBS
4	43, F	Pain. fever	4	15800	19	19	188	CD leak	EBS
5	35, F	Bile leak from drain	5	9800	16	38	198	IHD leak*	EBS
6	45, F	Biloma, jaundice	5	12400	47	139	368	Transection of the CBD	PDB, HJ
7	35, F	Biloma, pain, cholangitis	11	11200	45	62	265	CD leak, retained stones	PDB,EBS, removal of stones
8	42, M	Pain, biloma, jaundice	3	11200	11	43	201	CD leak,retained stones	EBS, removal of stones
9	35, M	Cholangitis	11	23200	95	58	198	Transection of the CBD	HJ
10	38, F	Bile leak from drain	7	5400	31	72	375	IHD leak*	ES
11	75, F	Biloma, jaundice	12	13900	38	54	205	CD leak	PBD, EBS
12	23, F	Jaundice, pain, biloma	15	17600	84	86	313	Transection of the CBD	HJ

** Patient who developed biliary leak following removal of hepatic hydatid cyst*

Abbreviations used: ERCP, endoscopic retrograde cholangiopancreatography; ALT, serum alanine tranaminase; ALP, serum alkaline phosphatase; CBD, common bile duct; CHD, common hepatic duct; CD, cystic duct stump; PBD, percutaneous biloma (abscess) drainage; HJ, hepaticojejunostomy with Roux-en-Y loop;

bile peritonitis and hemorrhage[17]. Compared to these drawbacks, endoscopic biliary procedures are minimally invasive, have lesser morbidity and mortality and are widely used in clinical practice today and should, therefore be method of choice. However, in patients in whom endoscopic biliary procedures fail or were not possible because of complete transection of the bile duct, initial percutaneous biliary drainage permits surgery to be delayed until sepsis is controlled and inflammation and infection in the periductal area subsides.

Recently, several series attest to the efficacy of biliary sphincterotomy and stenting in the treatment of biliary fistulas and bile leaks[1-3,16]. Our series differs from most of previous reports that only patients with bile duct leaks after LC were included. This explains the higher number of cystic duct leak and absence of intrahepatic duct radical leaks. Cystic duct leaks was the commonest cause of bile duct leakage in the present series. Reasons appeared to be lost or misplaced clips applied to the cystic duct; or tear in the remnant of cystic duct. Treatment depends on the presence of residual stones in the CBD or stricture, size of leak and presence of subhepatic collection. Whereas, major leaks need stent placement, small leaks may be treated simply with sphincterotomy. Although the endoscopic treatment of choice for the management of biliary leaks remains debatable but therapeutic goal is to eliminate pressure gradient between the CBD and the duodenum (by performing a sphincterotomy or inserting an endobiliary stent across the papilla) to promote the flow of bile into the duodenum and not out of the leak site. We feel endoprosthesis placement is the treatment of choice because it not only eliminates the pressure gradient across the papilla but also temponades the leak site.

Early recognition of bile duct leak after cholecystectomy is essential to reduce morbid complications. The clinical diagnosis of bile duct leak should be considered when a patient following cholecystectomy or hepatic surgery develops abdominal pain, fever, jaundice, peritonitis, persistent bilious drainage from the wound or surgical drains, or abnormal liver function studies. Ultrasonography was found most useful initial investigation; biliary dilatation or perihepatic collection gave useful clues.

Most of these patients were septic and critically sick on presentation. Immediate repair of the bile duct injuries with T-tube placement or biliary-enteric anastomosis is recommended when they are identified during operation, but unfortunately intraoperative detection is possible in small number of patients (15). Immediate surgical re-exploration in such patients who are often critically ill is difficult because of infection, inflammation and scarring in the periductal area and the morbidity and mortality from a surgical procedure in this setting is high at rates of 22 to 37% and 3 to 18%, respectively[12-15].

In conclusion, endoscopic management is quite safe and effective for patients with postoperative bile leakage. Although more complex biliary injuries, such as complete bile-duct transection require operative management with biliary-enteric anastomosis, endoscopic management together with ultrasonography should be considered as the therapeutic method of choice for most bile leaks.

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MAXIMUM VOLUNTARY VENTILATION VALUES IN YOUNG KASHMIRI ADULTS THROUGH ELECTRONIC SPIROMETERY

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ABSTRACT: Maximum Voluntary Ventilation (M.V.V.) was measured in young healthy nonsmoking permanent residents of Kashmir valley by electronic spirometry for both sexes. The subjects were mostly 17-30 yr. old, that included students, attendants of patients, medical employees. Five readings were taken, the reading with maximum value was considered for the study. MVV values for Kashmiri men were significantly higher than females. The M.V.V. values for both the sexes were higher than the accepted Indian norms till date and in males the values matched with reported western norm while the norms were below reference values for western males and females.

KEY WORDS: *M.V.V., Ventilation, Electronic Spirometer, Altitude, B.T.P.S, Regional Variation & COPD,*

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INTRODUCTION:

Maximum Voluntary Ventilation is most widely used pulmonary function test.

This test clearly demonstrates all the mechanical factors of breathing and becomes abnormal provides information regarding increase in airway resistance, reduced compliances or respiratory muscle force.

Lung function test is a tool in correlating with subjective dyspnoea and also helpful in evaluating exercise tolerance (respiratory reserve) and prognostic value in pre-operations evaluation form post-surgical respiratory problems, in addition it also provides a measure of respiratory muscle fatigue which is the largest drawback with the test, as it needs complete co-operation and efforts of the patient. Hence the old term of Maximum breathing capacity (M.B.C.) was replaced by term Maximum voluntary ventilation (M.V.V).

The values are affected by loss of co-ordination of respiratory muscles, musculo-skeleton diseases of chest wall, neurological diseases, de-conditioning from any chronic illness, i.e.; COPD, mild or moderate restrictive type as tachypnea. M.V.V is not related to FEV 1st sec. In view of multiethnic population with different regional parameters like free air pollution, body size, chest circumference, and altitude giving different norms in India, it is important to conduct the study. As such information is not available, the present study was conducted to measure M.V.V. in a large group of healthy young nonsmoking Kashmiris young adult population of both sexes.

Material and Method:

212 healthy non-smoking young adults from ICashmir valley (altitude 5000ft) of both sexes, males (126), females (86) of 17-30 yrs age were included in tins study after taking a detailed history and thorough examination fulfilling Has criteria laid down by A.T.S.1 (1994). The procedure was demonstrated by a skilled person to subjects before recording, which was done same-toe every day from (May to June).

The subjects were motivated during (he maneuver, which was done using MEDISPIROR - ELECTRONIC SPIRONETER in standing position. The mouth piece attached to electromechanical pneumotach was placed inside die mouth as disposable sterilized mouth pieces were used. The record was done for 10 seconds. The flow and volume output of MW maneuver accepted for study was eon&med by Flow/Vol plot (graph) and Vol/Time plot (graph) in accordance with above recommendation.

The Spirogram, where subject exhibited maximum efforts for entire maneuver for 6 seconds, with greater than 1 second piateau on V el/Time plot were selected for me study. The printed values and graphs were instantly produced and corrected to B.T.P.S. by electronic apparatus itself.

Results

Themean values of physical characteristics of the subjects are given alongwith M.V.V. values in Table I.

TABLE-I

1. AGE	Mean	Males.	20.9 yrs. S.D. (1.25
		Females.	20.45 yrs. S.D. (1.001
2. HEIGHT	Mean	Males	172.24 cm S.D (6.537
		Females.	159. 42 cm S.D (5.292
3. CHEST	Mean	Males	Inspiration 90.952 cm S.D (7.096 Expiration. 83.055 cm S.D (6.875
		Females.	Inspiration 87.09 cm S.D (6.3996 Expiration. 80.54 cm S.D (7.103
4. M.V.V.	Mean	Males	162.6 L\min S.D ± 52.89
		Females	117.7 L\min S.D ± 38.82

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DISCUSSION

MVV is very essential for showing exercise tolerance, breathing reserves and ultimately physical fitness to face the odd situation at the time of stress and need 2-3.

The values are higher for males than females as shown in the table - I. These values are higher than most of Indian norms available, though slightly less than some of the western norms i.e., Kory 3 (1961) 164 + 13 l/min, for males (Probability = Not Significant) but more than some of the western norms predicted by Mottey of 150 l/min i.e. mean 156+17.5l/min.

The MVV values of females as reported by S.C.Lakhera 4 (1997), 116.1 + 6.5 was less for n = 9 Ladakhi females and in the same study even for Delhites 111.4 + 6.5 was observed. The difference in values obtained by us could be contributed to the Mongolian race, as their anthropometric values are different from Aryan race in Kashmir valley, though they are residing at high altitudes which attributes to the values but may not be advantageous as once they start residing in lower plains of India for long period of time as seen in Delhites. These values are higher even for same race as reported by K.K Mahajan5 (1997) for females of Haryana 90.97 + 15.6 m age group of 18-20 yr.

Our present study showed positive co-relation with height and negative with age and sex, B.S.A., nutritional status in culture, downward mobility of females, may be contributing factors to these values.

The difference of socio-economic status, comparative pollution free atmosphere as compared with other states in India, high altitude, green revolution that was aided with sophisticated electronic equipment, which was more reliable. In addition Kashmir enjoys a high anthropomesric index as they are high hinders (as hypoxia is a known determinant ofhingftincti<Mis:WOOLCOCK)6.

Another reason for relativefy higher values better than rest of India could be better sanitary condition, less population congestion which otherwise toad to high morbidity rate of infection and deficiency, which hampers the growth and development of respiratory system.

CONCLUSION:

in conclusion the present study provides M.V.V. norms for young Kashmiri adults of botfa the sexes. The values for M.V.V. observed in Kashmir! young adults were of the same range as reported for western people of the same age group. However, M.V.V. vahies in Kashmiris were significantly higher than (he values reported in Indian norms of other states. This difference could be attributed to the factors mentioned above[7].

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"NEONATAL NECROTIZING ENTEROCOLITIS: A CLINICAL STUDY AND OUTCOME"

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Abstract: *Over a period of 10 Years 42 neonates were documented for NEC with an incidence of 1. 3% of all NICU admissions and 0.2% of all live births. 80 .9% babies were <2000 gms and 76 .2% were < 36 weeks of gestation .23.8% ,33.3% and 42.9% babies had stage -I, II and III respectively as per modified Bell's classification. Average age of presentation was 5.2+4. 1 days and the severe cases had most early onset. Gastric aspirate (92.8%) lethargy (88.1%),hematochezia (66.7%,) bradycardia (52.4%) and unstable temperature (52.4%) were the most prominent clinical features present in these babies. Bleeding manifestation (23.8%) and shock (19.0%) were mainly present in severe cases. Abdominal signs like distention (95.2%) erythema of abdominal wall (69.0%) and tenderness(47.6%)were other main features. Intestinal distention (71.4%) pneumoperitonium (9. 5 %) and pneumatosis intestinalis (28.6%) were major radiological findings. Major areas of involvement were ascending colon (13.3%), caecum (13.3%) whereas,53.3% had multiple areas of involvement . Klebsiella(22.2%), Esch. Coli (16.6%) and staph. Aures(16.6%) were the organisms isolated from 18 culture positive cases. Severity of NEC and mortality was inversely related to birth weight and gestational age.100%mortality was noted in babies with birth weight< 1000 gms and gestational age< 28 week. Overall mortality was 45% which was 20.0%,35.7%and 66.7% for stage I,II and III respectively.*

Key words: *Necrotizing Enterocolitis (NEC). Neonate, Very Low Birth Weight(VLBW)*

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With the increased survival of VLBW and premature babies, the incidence of NEC has been increasing and at present ranges between 1-5% of all admissions in the neonatal intensive care unit[1-5]. Inspite of appreciable medical and surgical therapy ,the mortality has been ranging between 20-50%.[4-7] Since a combination of factors initiate and propagate the disease and pathogenesis being incompletely understood ,various preventive measures have been unsuccessful[8]. A greater emphasis is laid on the early recognition of disease, so that prompt management is started well in time ,thereby reducing the severity and complication due to disease.

We report our experience of this condition over a period of 10 years with the objective of assessing the clinical presentation including radiological features and outcome of NEC.

Subject and Methods:-

During the study period of 10 years,3235 neonates were admitted in the NICU of Sheri-Kashmir Institute Srinagar. These cases included those born in the Institute itself and those referred from Children's hospital Srinagar, District hospitals and peripheral centers of this Kashmir valley, covering a distance upto 0.2-200 Kms. Out of them 42 neonates were diagnosed as having necrotizing enterocolitis (NEC), based on their clinical features of gastric residue, and/or vomiting, abdominal distention and blood in their stools, together with the radiological evidence of pneumotosis intestinalis, pneumoperitonium, portal venous gas. Finally these babies were grouped into 3 stages as per the modified Bell's classification[9]. The relevant details regarding clinical and radiological features, management and outcome of these babies were recorded on a pretested proforma . The results thus obtained were tabulated and statistically analysed using X2 test and student's T test

Results

42 babies were diagnosed for NEC, with an incidence of 1.3% of all NICU admissions and 0.2% of all live births. Male v/s female ratio was 1.5:1. The mean birth weight was 1579.30 + 597. 1gms (range 7[illegible]25 gms) and the mean gestational age was 32.7 + 4.4 (range 25-40 weeks).

10 (23.8%) cases had stage I disease, while 14 (33.3%) and 18 (42.9%) had stage II and III respectively. Most severe disease (stage III) was noted in very low birth weight (1270 + 494.7 gms) and premature babies (29.9 + 3.9 wks) (Table-1).

The average age of presentation was 5. 2 + 4.1 days (0 –24 days). 81% presented during the first week of life, the peak being 48-72 hours Most severe cases had early onset of the disease. The clinical features including radiological findings of the abdomen are shown in table-11. Bleeding

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manifestations, shock, jaundice, pneumotosis intestinalis and free fluid were observed mainly in stage 11 and stage 111 disease.

Table :I Showing characteristics of Infants In Relation to various stages of NEC.

Character	Stage-I	Stage-II	Stage-III	Overal
No. of Cases	10(23.8)	14(33.3)	18(42.9)	42.
Birth Weight (gms)	1872.5±641.9	1767.5±490.6	1270±494.7	1579.3±596
Gestation (wks)	35.2±3.0	34.5±3.6	29.9±3.9	32.7±4.4
Age at onset (days)	8.8±5.8	5.1±2.7	3.4±2.1	5.2±4.1
24 hrs		—	1(5.5)	1(2.4)
2-3 days	2(20.0)	5(35.7)	11(61.1)	18(24.9)
4-7 days	4(40.0)	6(42.9)	5(27.8)	15(35.7)
8-15	2(20.0)	3(21.4)	1(5.5)	6(14.2)
16-21	2(20.0)	—	—	2(4.8)
Mortality	2(20.0)	5(35.7)	12(66.7)	19(45.2)

Figures in parenthesis indicate percentage

Most common site of involvement was colon in those 15 cases, who underwent laparotomy. 53. 3% cases had multiple areas of involvement. Various microorganisms were isolated in 18 culture positive cases. 9(50%) cases with stage III disease were positive. Klebsiella was commonest organism (22.2%) followed by E.Coli (16.6%) and staph. Aureus (16.6%). Multiple organisms were isolated in 2(11.1%) cases which were multidrug resistant.

Serious complication like neutropenia in 7.1%, thrombocytopenia (11.9%), DIC (7,1%), acute renal failure (4.8%) and cardiac failure (2.4%) were observed in these cases.

The overall mortality rate was 45.2% and was 20.0%, 35.7% and 66.7% for stage 1,11 and 111 respectively. Maximum mortality was noted in 9/15 (60.0%) surgical as against 10/27 (37.0%) in medically treated cases and those with multiple complications and risk factors.

Discussion:

The incidence of (NEC) in the present study is comparable with the reported figures of 1-5%[1-5]. However, the incidence is lower than 3.5%,the one reported from India[4], possibly due to inclusion of high number (57% of suspected (stage 1) cases of NEC in that study ,because one more study[1] noticed comparable (1.38%) incidence of NEC 50% babies were <1500 gms and 47.6% <32weeks of gestation. These figures are in close conformity with Narang et al[4].Since premature babies are prone to develop multiple risk factors and their gastrointestinal tract being immature, chances of developing NEC is much higher than normal full term babies[8-9]. 81% cases presented in first seven days of life. One previous study[3] noticed similar age of presentation. However, contrary to what has been noticed there, we noticed early presentation in more premature and LBW babies and these babies had more severe disease(stage II& III), possibly due to rapid development and progression of disease in these high risk babies without getting sufficient time to notice mild form of disease.

The clinical presentation of NEC is variable, presenting from mild form indistinguishable from other neonatal disease to severe form of disease. The clinical features noted by us are similar to those reported by Narang et al[4] and others[1]. Evidence of systemic illness like recurrent apnoeas, lethargy, temperature instability, bradycardia and abdominal distention are usually nonspecific findings and may be noticed in any systemic illness like septicemia.

Most of the babies had to cover long distance in very low outside temperature (during winter in Kashmir) and were hypothermic (69%) on admission and could be possible reason that 76.2% cases of our study developed severe disease. Narang etal [4] has reported 57.1% cases with mild disease, while in another study[10] 36% were reported as mild cases.

Unlike one previous study[4], we noticed bleeding manifestations, shock and oedema in more severe cases. Similarly, intraabdominal mass, and free fluid were noted in severe form only. Hematochezia, one of the characteristic findings of NEC (II) was noted in 50% of mild cases and 72.2% of severe cases, the figures are definitely higher than the one reported by Narang et al[4] and other[1-2].

Radiological evidence of pneumotosis intestinalis, portal venous gas, pneumoperitonium and free fluid were specifically noted in more severe cases. Pneumotosis intestinalis was a common finding, particularly in most severe cases. This finding was noted in 71.4% and 83.3% cases of stage II and III receptively .These figures are in close conformity with those reported by others [4]. Only one out of 6 unfed babies developed pneumotosis intestinalis, which is close to figure of 14% as reported by Marchildon et al [12]. So feeding can be regarded as one of the important factors responsible for the development of pneumotosis intestinalis and thus progression of disease.

Positive blood culture signifies more serious disease. 18 (42.9%) cases were positive for various organisms, which is lower than one reported figure[10], however, close to 34.4% as reported by Narang et al[4] from India. 50% cases from group III were culture positive compared to 11% in mild cases, which otherwise could be responsible for more serious disease. As reported in previous studies[4,7,8], Klebsiella pneumoniae was the most common organism isolated in these cases. Patients with gram negative septicemia had high mortality, as reported otherwise also without NEC. We didn't notice only epidemic form of disease in our NICU.

As reported in a few earlier studies[4,11,13], multiple areas of intestines were involved in more than 50% cases, maximum involvement being at ileo-cecal region. This area

Table: 11 Showing clinical features in various stages of NEC.

Clinical features	Stage-1 (n-10)	Stage-11 (n-14)	Stage-111 (n-18)	Overall (n-42)
(b) General Features				
Gastric aspirate	9 (90.0)	14(100.0)	16(88.9)	39(92.8)
lethargy	8 (80.0)	13(92.8)	16(88.9)	37(88.1)
Hamatochezia	5(50.0)	10(71.4)	13(72.2)	28(66.7)
Bradycardia	6(60.0)	8(57.1)	8(44.4)	22(52.4)
Unstable Temperature	3(30.0)	8(57.1)	11(61.1)	22(52.4)
Apnea	3(30.0)	5(35.7)	6(33.3)	14(33.30)
Pallor	3(30.0)	4(28.6)	6(33.3)	13(31.0)
Jaundice	2(20.0)	4(28.6)	8(44.4)	14(33.3)
Bleeding menifestation	--------	5(35.7)	5(27.8)	10(23.8)
Shock	--------	2(14.3)	6(33.3)	8(19.0)
Oedema	1(10.0)	2(14.3)	3(16.7)	6(14.3)
(b) Abdominal Signs				
Distention	8(80.0)	14(100.0)	18(100.0)	40(95.2)
Erythema of Abdominal wall ± Cellulitis	7(70.0)	10(71.4)	12(66.7)	29(69.0)
Tenderness±Rigidity	2(20.0)	8(57.1)	10(55.5)	20(47.6)
Absent Bowl Sounds	2(20.0)	4(28.6)	6(33.3)	12(28.6)
Intra Abdominal Lump	--------	2(14.3)	4(22.2)	6(14.3)
Ascites	--------	1(7.1)	2(11.1)	3(7.1)
(c) Radiological signs				
Distention+ileus	8(80.0)	10(71.4)	12(66.7)	30(71.4)
Pneumotosis intestinalis	2(20.0)	10(71.4)	15(83.3)	22(28.6)
Portal Venous gas	--------	1(7.1)	2(11.1)	3.(7.1)
Pneumoperitonium	--------	---------	4(22.2)	4(9.5)
Ascitis	---------	1(7.1)	2(11.1)	3(7.1)

Figures in parenthesis indicate percentage.

being more distal to the origin of the superior mesenteric artery[13], compromising the blood supply to this area during hypoxia.

With the available resources, early recognition, frequent monitoring and prompt management, the survival rate, that were almost nil in the earlier reports, now ranges from 50-80%[4-7]. Since most of our cases had severe disease, with multiple risk factors like prematurity, LBW, Hypothermia and complications like thrombocytopenia, DIC renal failure etc, the mortality of 45.2% noted by us was expected. Narang et al[4] have noted a poor outcome in patients with similar features. Similarly, cases with perforation, peritonitis etc had to undergo surgical intervention and the outcome in such cases was poor. Similar result have been noticed by Dolores. C et al[6] in their 101 surgical cases, however, Kliegman RM[2] didn't find any difference in surgically or medically treated cases.

Thus, the conclusion drawn is that with early referral of high risk babies, early recognition and prompt management of disease, we will be able to minimize the complications and progression of the disease and thus mortality due to NEC.

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PERFORMANCE OF LINEAR ACCELERATOR MEVATRON-74 AT SHER-I-KASHMIR INSTITUTE OF MEDICAL SCIENCES SOURA, SRINAGAR KASHMIR (INDIA)

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Abstract: *In July 1984 Siemens Linear Accelerator (Mevatron-74) with Photon energy of 10 MV and electron energies of*^{5,6,7,8,10,12} *MeV was installed at this Institute. Durign the last fifteen years we have been able to treat only 912 patients using photon beam and 55 patients using electron beams. The machine is non-functional since 1990. The results have been compared with Co-60 (Theratron-780) which was also installed around the same time. Eleven thousand patients have been treated during the period under study on Cobalt machine.*

Discussed in this paper is our experience regarding the performance of Linac. This costly machine has not been cost effective at all and has not served the purpose for which it was purchased.

The aim of the study is to lay the guidelines for radiotherapy centres in developing countries so that correct decisions are made at the time of purchase of very costly-radiotherapy equipment for the management of cancer patients and the benefit of high technology reaches the patient.

Key words: *Linear Accelerator, Photon beam*

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Introduction

Electronic Linear Accelerator evolved from the microwave radar development of world war second[1]. The klystron tube invented at Stanford provided a vital source of microwave power for radar. In late 1940's the high power klystron and microwave principles incorporated in its design were used to construct and power a Linac for research in Physics and Industrial Radiography. By the mid 1950's a Linac suitable for treating deep seated tumours was built in Stanford Hospital at San-Francisco. Since then medical Linear Accelerator have been in vogue.

The primary advantage[2] of accelerator over Co-60 has been their higher dose rate and more uniform dose. Patients thus need, shorter treatment and the length of time it takes to provide the daily treatment does not vary. High Megavoltage Linacs permit treatment that is impossible with Cobalt-60. A combination of greater depth dose and deeper build up, maximum dose is delivered far below skin surface and healthy tissues receive far less dose. Malignancies such as cancers of the Cervix, prostrate and urinary bladder are best treated with high energy machines. Additionally, high energy beams permit simple treatment planning from the Anatomical point of view.

An added advantage of the Linac is that it gives electron beams of various energies. These electron beams offer the advantages of rapid and sharp fall off in depth dose, variable depth of penetration, less bone absorption than x-ray beams, and decreased radiation build up. The superficial tumours are best treated with electron beams. The development of Cobalt-60 for Radiotherapy took place during and after world war-II. It has an 1.25 MV average photon energy and half life of 5 years and .5 cm skin sparing effect. Initially stationery units were in practice which were followed by rotational units centering around 60 cm, 80 cm even 100 cm (ISO Centre). The performance of these units in case of head and neck, brain, and tumours which are not very much deep seated has been found excellent. The results are very much comparable with 4 MV Linacs. With better mould Room facilities and excellent physics back up even the superficial tumours are being treated where there are no electron facilities available.

In order to provide good radiotherapy for the treatment of cancer arising in various sites, a variey of equipment is necessary depending upon the relative incidence of cancer at various sites, the treatment policies adopted and the internal administrative arrangements for handling the cancer patient flow.

All the parameters essential for making the choice of equipment were taken into consideration and selection of Linear Acceleration and a Cobalt-60 unit was made for this Institute.

The department purchase a Seimens Medical Linear Accelerator, Mevatron-74 and Theratron-780 which were commissioned in 1984[3]. The Acceleration had the following facilities besides Photon energies of 10 MV:-

a) Electron energies5,6,7,8,10&12 and 12 Mev b) Field size min

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Fig.1: Showing the day, month and year wise performance of Linear Accelerator

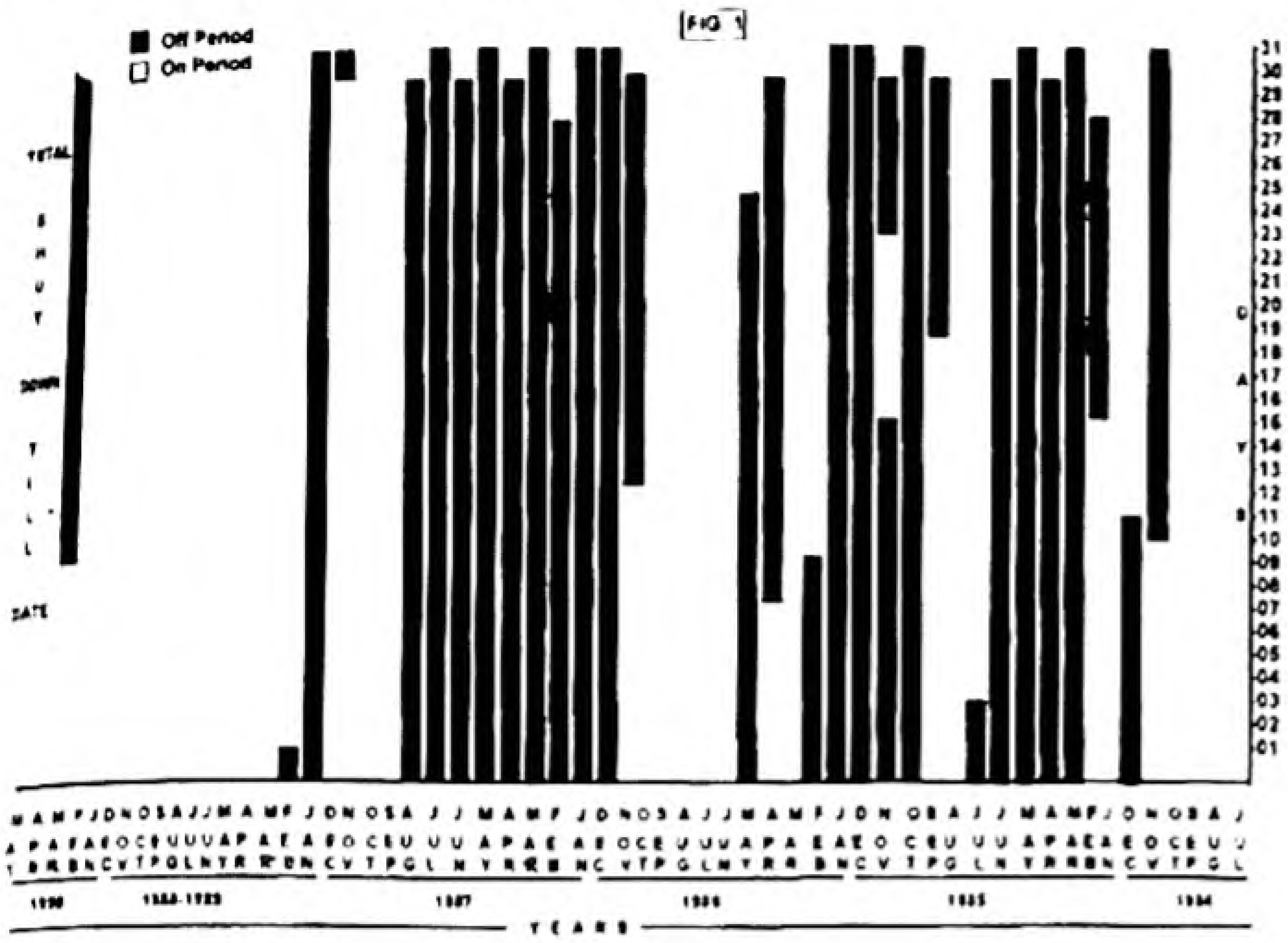
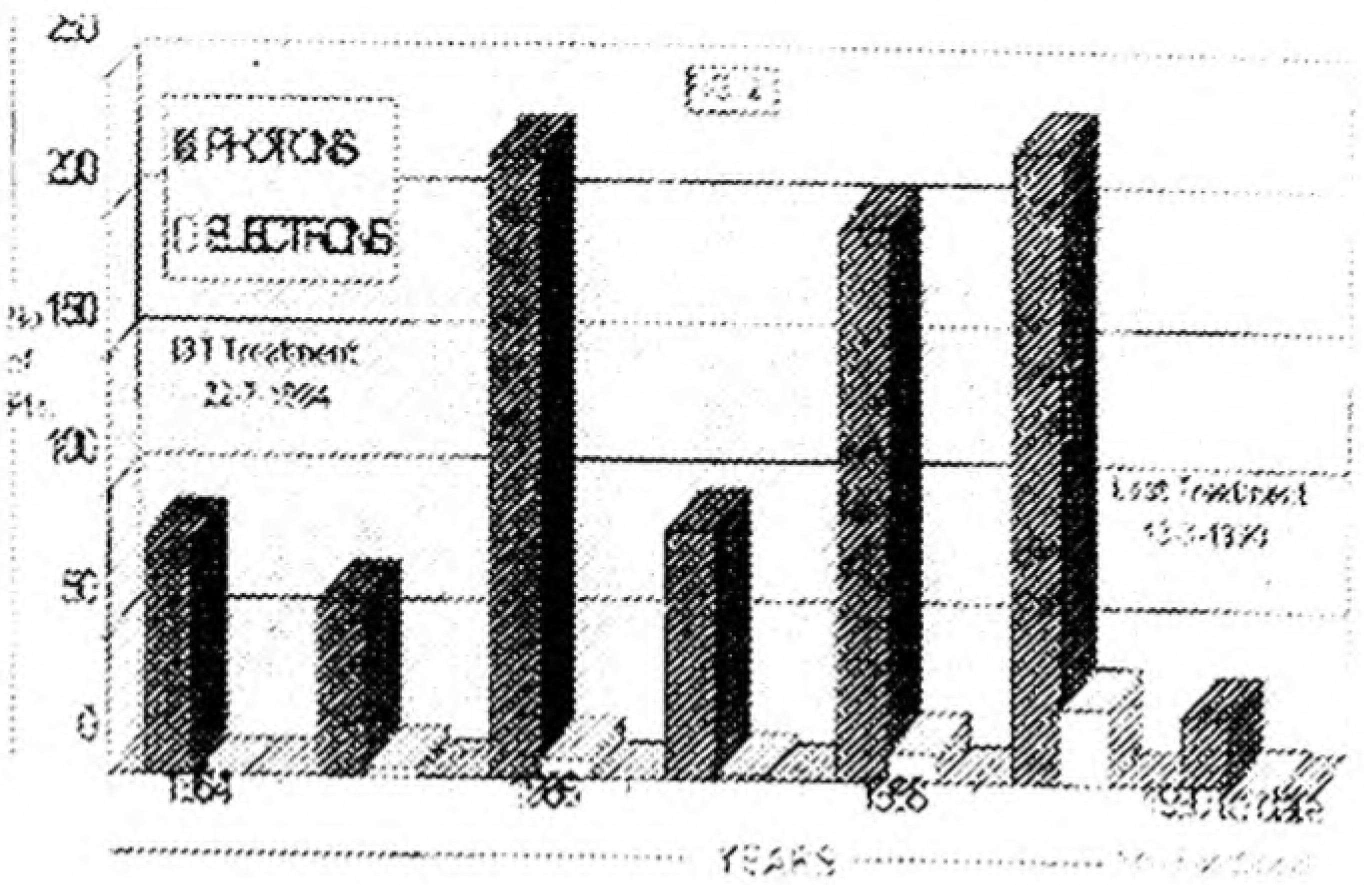


Fig.2: Showing performance of Linear Acceleration for Electron and Phonton beams year-wise.



(oxo) and max (40 cm x 40 cm), c) the dose delivered at 10 cms for a field size of 10 cm x 10cm in 74% d) the machine is isocentric at 100 cm e) for 10 Mv x-rays the D. max for a field of 10cm x 10cm was at 2.5 cm and max.

The minimum and maximum field size for Theratron-780, Co-60 machine is 4 cm x 4 cm and 35 cm x 35 cm respectively. It is Iso centric at 80 cm and has maximum build up at 0.5 cm from the surface.

Material and methods

The "Code of practice" as laid down in various protocols[4,5] was followed in verifying the energy, and dosemetery of the Photon and various electrons beams. The commissioning and Quality assurance tests of the equipment were also performed. The output checks were performed every month alongwith verification of linearity of the x-ray beam. All the results were found to be in agreement with the prescribed parameters of the machine and were found constant.

The measurements were made using Therados RFA-3-50 radiation field analyser. This analyser allows automatic scanning, real time averaging of the data and easy renormalization of the sensitivity of the scanning detectors. The data was obtained using PTW ion chambers.

The dose output, % depth dose, TMR measurements were carried out by ionex 2500/3 secondary standard dosemeter using 0.6 cc ion chamber.

The isodose curves for both photon & electron of different energies of all the field sizes viz were plotted using the plotter. Wherever essential film densitometery was also performed.

After completing the commissioning tests and generating the beam data the machine was put to patient use.

Results and Discussions

Several conclusions about the performance of the equipment can be drawn from Fig. No. 1. This figure shows the day-to-day performance of the equipment from July 1984 till date. It is evident that the equipment is totally non-functional from March 1990 onwards. During the period from June 1984 to March 1990, the %age of breakdown was a high as 33%.

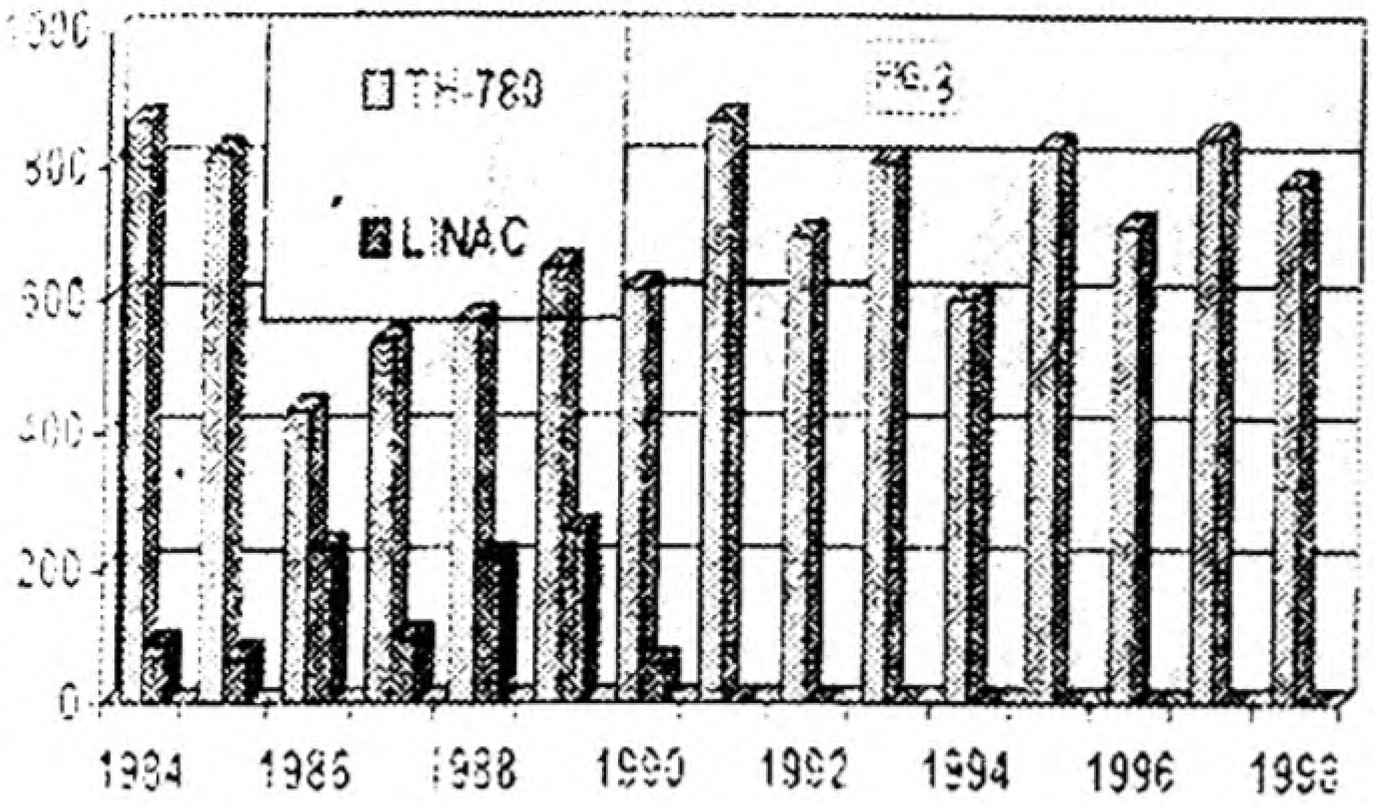
Fig No. 2 shows the exact no. of patients treated by Photon and electron beams. 150 patients had to be shifted from Linear Accelerator to Cobalt for treatment. The maximum number of patients treated on the machine is 223 in 1986 and 227 in 1989. The total no. of patients treated with Photon and electrons is 912 and meagre of 55 respectively till date.

Fig. No. 3 shows the year-wise number of patients treated on Mevatron-74 Linear Accelerator and Theratron-780, Cobalt-60. The total number of patients treated on both the machines is 11600 upto March 1990. Only 912 were treated on Linear Accelerator and more than ten thousand on Theratron-780. The Accelerator is non-functional since 1990 and the Cobalt machine continues to perform non-stop. Even during the period when Accelerator was functional the maximum number of patients were treated on Cobalt as shown in Fig No. 3. The source was loaded on Cobalt machine in 1983 and then was replaced in 1996 after completion of three half lives indicating the better maintained condition of Theratron-780.

From the data presented above it is obvious that the performance Linear Accelerator in our Institute has been dismal.

Right from the day of commissioning it started giving problems like interruption in dose delivery during treatment and frequent breakdowns. The interlocks showed the problems of different nature which were not esentially inherrent in the machine but due to the ommissions like that of environment, power supply, water supply and work practice, the performance was still worst when the machine

Fig. 3: Showing the no. of patients treated on Theratron-780, Cobalt-60 and Linear Acceleration.



was used in electron mode.

Usually we had to shift the patients from Accelerator to Cobalt as is used to take weeks to make the machine functional. The machine had to be kept under the close supervision of well trained company engineer who used to tune the machine at least once a day. Even to our best efforts, the equipment worked only for six years viz 1984 to 1990. One of the leading Radiotherapy centres in the country, who had purchased the Accelerator from the same company has replaced their unit since. Our views have been shared by Karzmark et al, Fletcher, Bhton & Dweey[6,7,8,9,10]

The experience of the Institutions world-over is that there is no therapeutic advantage in replacing a well designed and a well built Cobalt-60 Unit with a low Megavoltage Linear Accelerator because the depth dose and bean characteristics of both are virtually same. Moreover, Linacs are costlier and are always difficult and expensive to maintain[3]

Accelerator conceive highly sensitive electronic circuits which requires continuous maintenance. Also the cost per treatment and service contract charges are too high especially for a place which is far away from the base office of the company.

Summary

The performance of Linear Accelerator installed 15 years ago has been evaluated and compared with a Cobalt-60 unit installed simultaneously. A comparison has been made regarding the installation, commissioning, maintenance and performance. Our results clearly show that for a developing state of a developing country the performance of the Linac is dismal. Frequent breakdowns, costly maintenance and cost of spares make the machine hardly useful.

The maintenance of Cobalt machine on the other hand is negligible. The initial cost is vary less compared to - Linear Accelerator. Though the co-source needs to be changed yet the cost of treatment is considerably low. The treatment on the cobalt machine is regular and smooth. To run the machine it needs easily available inputs like electricity, airconditioning and local service.

To conclude the cost of both purchase and maintenance of Linacs fare badly compared to Cobalt with source a Cobalt machine is considrably less expensive than Linear Accelerator.

Down time is a serious problem for a clinical treatment centre. Labour rates are enormous for repair and if we lose the use of machine for one month the patient care suffers.

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GRAVES' DISEASE IN A FEMALE WITH ELEVATED SERUM THYROXINE-GLOBULIN CONCENTRATION

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Abstract: *We present a case report, with details of the patient's laboratory results before and after developing Graves' disease highlighting important aspects to be considered in cases with familial elevation of Thyroxine binding globulin (TBG).*

A 31-year-old female was diagnosed to have familial elevation of TBG. Three years later the patient developed Graves' disease and received radioactive iodine treatment. Failure to recognize TBG excess as cause for hyperthyroxinemia caused inappropriate management of the patient for almost a year.

Thyroxine binding globulin excess causes elevation of total T4 levels. This should be kept in mind when treating a patient diagnosed to have hyper or hypothyroidism. When in doubt measurement of free hormone levels should be seriously considered, and an expert opinion obtained.

Keywords: *Graves' disease, Thyroxine binding globulin, Hypothyroidism*

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Case Report

We report a 31-year-old female patient who was referred to our clinic in 1994 because of "abnormal thyroid function tests". Earlier she had been seen by a physician for complaints of fatigue, dizziness, and occasional palpitations. Thyroid function tests (TFTs) were obtained as part of work-up. The serum thyroid stimulating hormone (TSH) level was 1.4mu/L (N 0.47-6mu/L), total T4 was elevated at 17.1 ug/dl (N 5.5-11.5ug/dl), resin triiodothyronine (T3) uptake was low at 24% (N25.25-40.46%), free T4 was 1.9ng/dl (N 0.75-2.00ng/dl), Total T3 was 252 (N 85-185 ng/dl), and the free T3 was 417 pg/dl (N 250-550 pg/dl). When first seen she had no symptoms of hyperthyroidism. When questioned about thyroid disease she recalled being told to have abnormal thyroid tests several years ago. She also had a strong family history of "thyroid problems" (mother, grandmother, and all three of her sisters) for which they did not need any treatment. Since the TFTs suggested the possibility of excessive thyroxine binding proteins, measurement of thyroxine binding globulin (TBG), thyroglobulin, as well as thyroid antibodies was obtained. Thyroid antibodies were reported negative and thyroglobulin was 15 ng/ml (within normal limits). After excluding secondary causes of hyperTBGenemia (estrogen excess, pregnancy or liver disease, etc,) patient was diagnosed to have primary familial elevation of TBG. Patient was asked to bring the diagnosis to the attention of physicians in order to avoid any future unnecessary work up for hyperthyroidism (because of elevated T4) levels unless symptoms and signs warranted a search.

The patient was lost to follow-up and did not return until after she was seen in 1997 by a different physician, for complaints of tiredness, sweating, diarrhea, weight loss, anxiety and insomnia. Thyroid function tests done at that time showed a T3 resin uptake of 22.20%, total T4 21.4 ug/dl, TSH was <0.05 mu/L. A thyroid scan showed increased radioactive iodine uptake of 62% at 24 hours. She was diagnosed as having Graves' disease and referred for radioactive iodine therapy in August of 1997. Six weeks after the radioactive iodine therapy the patient was started on a small dose of L-thyroxine when her serum TSH level was elevated at 30.60 mu/L. The patient was kept on 0.05 mg of L-thyroxine although her TSH was persistently high. In May 1998 while the TSH was still high (17.7 mu/L) her L-thyroxine treatment was stopped due to "elevation" of her T4 level (14.7 ug/dl). One month later her treatment was restarted at the same previous dose and then increased in July to 0.1 mg/day. In September she was referred to our clinic again for evaluation of "abnormal thyroid function tests" (for details see Table 1). When seen in our clinic she was clinically euthyroid and the TFTs obtained showed that the TSH had come down to 6.54 mu/L, total T 4 was 17.3 ug/dl, T 3 resin uptake was 19.8, and TBG was 43ug/ml. The patient continued to be euthyroid after that on Ll-thyroxine 0.1 mg/day.

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Table-1: The thyroid function tests of the patient following radioactive iodine therapy

Date	Total T4 5.5-11.5 ug/dl	Free T4 0.75-2.0 ng/dl	T3 uptake 25.25- 40.46%	TSH .47-6.9 mu/l	Treatment
10/09/97	6.6		<20.10	30.60	L-thyroxine 0.05 mg./day
12/3197	9.6		19.20	102.50	L-thyroxine 0.5 mg/day
05/06/98	14.7		18.5	17.7	L-thyroxine stopped
06/09/98	3.3	0.13	<19.8	117.28	L-thyroxine 0.05 mg/day
07/16/98	8.0	0.57	<19.8	101.74	L-thyroxine 0.1 mg/day
09/22/98	16.2	1.29	20.0	19.26	L-thyroxine 0. mg/day
10/26/98	17.3		19.8	6.54	L-thyroxine 0.1 mg/day

Discussion

We report this case to reiterate several points: a) Elevation of TBG should be suspected as a cause of increased total T4 when the free T4, and T3 resin uptake are normal. b) Elevation of TBG might pose a dilemma when replacing thyroid hormone in such patients. Elevation of the levels of TBG in response to pregnancy and administration of estrogens is commonly recognized[1] However, familial / genetic elevation of TBG often gets overlooked.. Familial elevations in TBG have been recognized since 1959 and evidence has shown an X-linked dominant mode of inheritance[2,3]. It has a prevalence of 1:25,000[4,5]. Our patient stated that she had mentioned her previous diagnosis to her physician. In spite of that, her hypothyroidism was inadequately treated following the radioactive iodine therapy for almost a year due to difficulties in reconciling total T4 levels with those of persisting elevated TSH (without taking into account the patients' primary TBG elevation). Her T3 resin uptake was low when she was referred to us and this has been reported in patients with TBG excess[6]. In previously reported cases, diagnosis of elevated TBG and Graves' disease was made concurrently[7-9]. Our case differs in that the diagnosis was documented 3 years before she developed hyperthyroidism, yet difficulties were encountered, and proper treatment delayed due to failure of communication between the patient's treating physicians.

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BRONCHIECTASIS IN MARFAN'S SYNDROME A STUDY OF A SAUD FAMILY

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Abstract: *Marfan's Syndrome commonly presents with skeletal, cardiovascular and ocular features. Bronchiectasis as a pulmonary manifestation has only rarely been reported. A family study has never been reported. We report a case of Marfan;s Syndrome presenting with bronchiectasis in which a full family study revealed two siblings of the proband case had Marfan's Syndrome, one of whom had bronchiectasis.*

We recommend a family study of patient's with Marfan's Syndrome and Bronchiectasis which may reveal bronchiectasis in a family member at an early stage, the aggressive management of which, may avert long term lung damage.

Key words: *Bronchiectasis, Marfan's Syndrome*

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Inrtroduction

Marfan's Syndrome is a rare disorder of connective tissue presenting with skeletal, cardiovascular and ocular features. It is inherited as an autosomal dominant disorder with variable expression. Various pulmonary manifestations have been described the commonest being spontaneous pneumothorax[1]. Few cases have been reported with association of bronchiectasis with Marfan's Syndrome and none studied the occurrence of bronchiectasis in family members of index cases of Marfan's Syndrome and bronchiectasis.

We present a proband case of Marfan's Syndrome with bronchiectasis and a study of the family.

Patients, Methods and Results

Case Report

A 22-year old male Saudi student presented with a long standing history of cough which in the last 4 years became worse with production of large amounts of purulent sputum with occasional haemoptysis. He had frequent episodes of fever with increased production of sputum — one which led to his admission. On admission, he was febrile (Temp. 38.90c), tachypnoeic (respiratory rate 32 mi^{-1}), clubbed and produced large quantities of greenish-yellow sputum. Examination of the respiratory system revealed central trachea, normal percussion note and breath sounds and coarse bilateral crepitations. Examination of the musculoskeletal system revealed Marfanoid features as follows: Arachnodactyly, positive wrist and Steinberg signs, dolichosternomelia, low ratio of upper segment to lower segment (height 179 cm (o.86), arm span 182 cm) and high arched palate. Examination of the cardiovascular system revealed a midsystolic murmur with a click. Examination of the eyes, central nervous system and abdomen were normal.

Investigations

Full blood count revealed haemoglobin 132g/L a leucocytosis of 15,000/cm and normal platelet count. Erythrocyte sedimentation rate was 60 mm/hg. Liver function tests were normal as were the levels of 01-antitrypsin (1.5g/L) and IgE(0.0002 g/L). Serum precipitins were negative for aspergillus fumigatus, sputum culture grew Haemophilus influenzae but no fungal or acid fast bacilli growth. Chest x-ray revealed focal cystic chages compatible with bronchiectasis in both lower lobes and right middle lobe. This was better demonstrated onCT-scan of the chest (Fig. 1). Echocardiogram shows evidence of mitral valve prolapse with dilated aotic valve root (50 mm). Slit lamp examinationof the eyes was normal. Lung function tests demonstrated non-reversible airway obstruction. A diagnosis of MarfanSyndrome with bronchiectasis was madeand patient was treated withCefuroxime, bronchiectasis and postural drainage. He was discharged and followed up for over 2 years with occasional infective episodes which did not require hospitalization.

Family Screening

The proband is the first of seven siblings to parents. Both parents and the remaining six siblings were interviewed and underwent physical examination, CT Scan ofthechest, echocardiography, slit lamp examination of the eyeds. Lung function tests, serum levels of 01 antitrypsin, IgE, IgE levels and aspergillus precipitins were done for the index case and the sibling with Marfan's Syndrome and bronchiectasis (S!). The findings are presented inTable 1.

Findings

The family study showed that all the siblings had some

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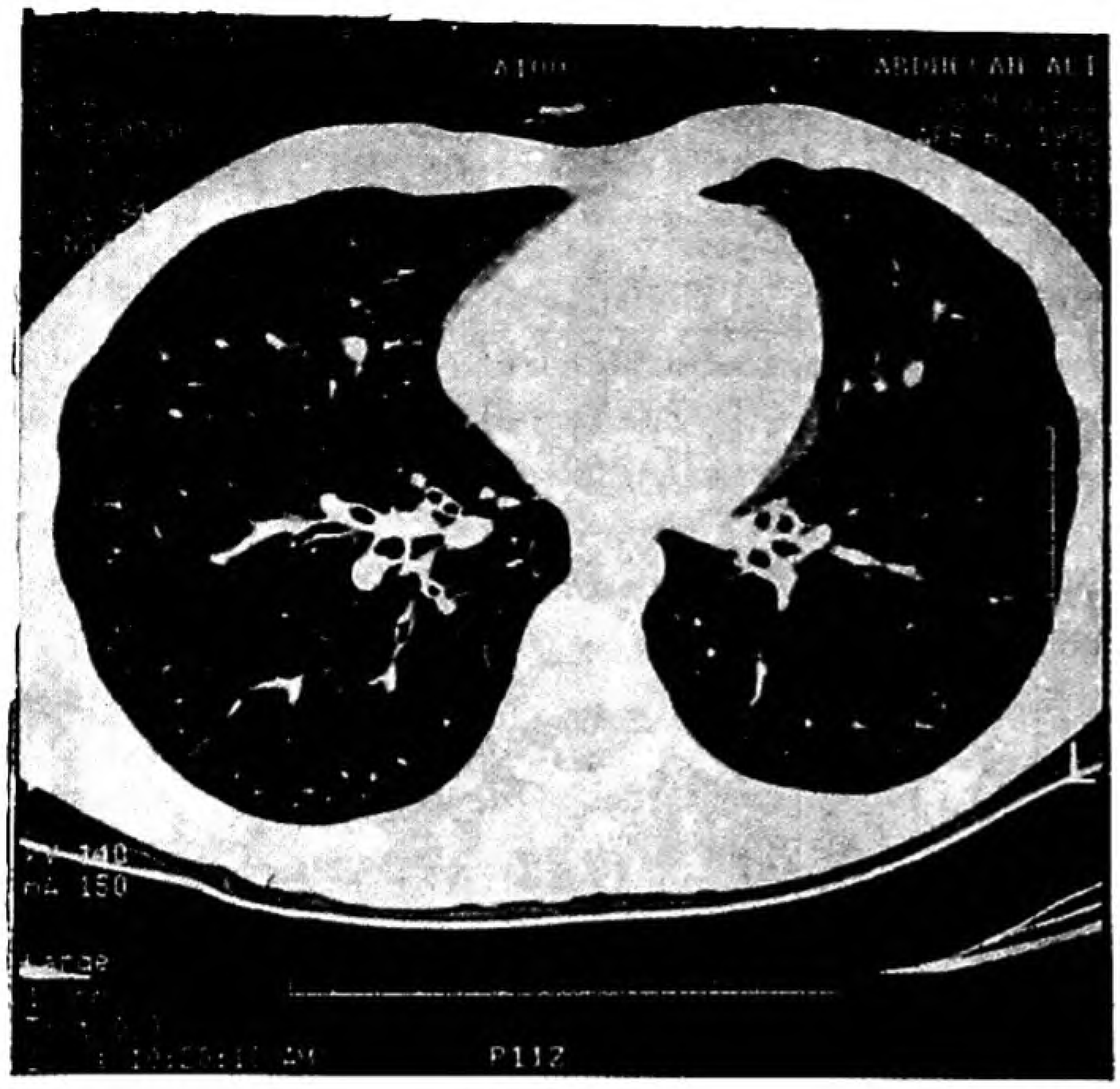


Fig. 1

skeletal features of Marfan Syndrome but two others fulfilled the criteria (atleast two of skeletal, cardiovascular or ocular features) for the diagnosis of Marfan Syndrome. The oldest of these had symptoms and radiological features of early bronchiectasis. The second sibling, much younger than the roband, had no symptoms or signs of bronchiectasis as are the remaining siblings.

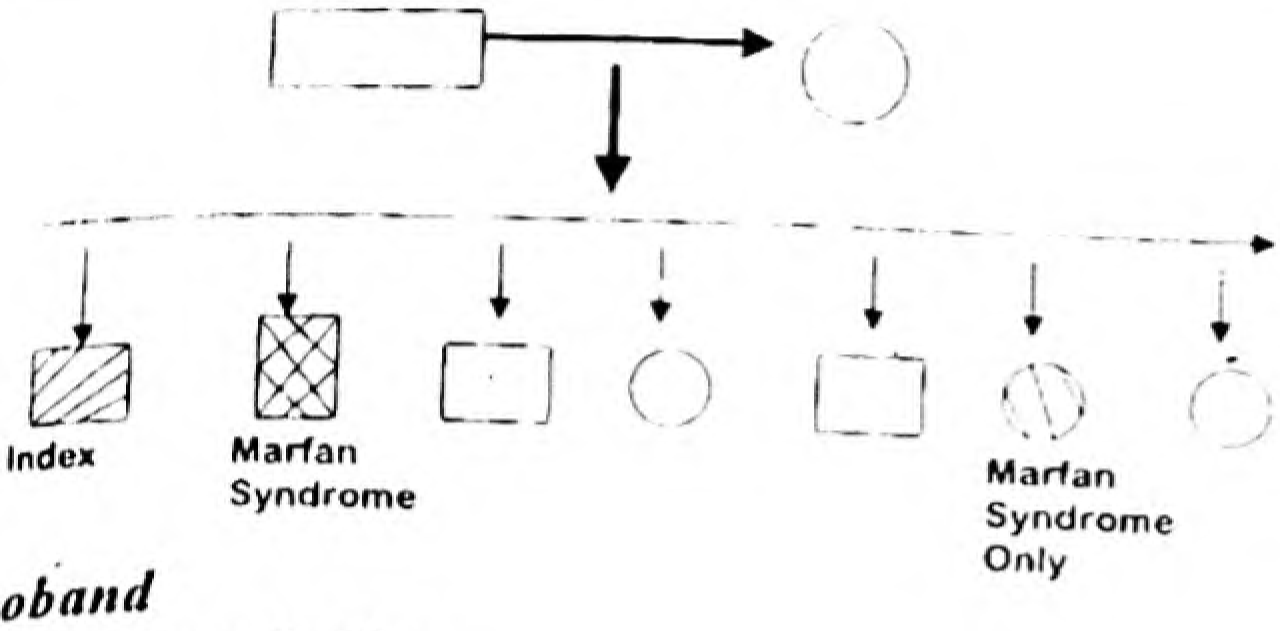
Discussion

A wide spectrum of pulmonary disease occur in about 10% of patients with Marfan Syndrome[2]. These range from spontaneous pheumothorax (the commonest), builae, cystic lung disease, emphysema, recurrent infections to upper lobe fibrosis of obscure origin. Bronchiectasis is a rare association and has so far been described in only five patients inthe English literature[3,4,5,6]. Although incidental bronchiectasis cannot be ruled out, it seems most probable that this susceptibility is real and is releated to the collagen

Table 1

	F	M	S1	S2	S3	S4	*S5	S6	P
Age	49	38	20	18	15	13	11	9	22
Symptoms / Signs	-	-	+	-	-	-	-	-	+
Height (cm)	172	157.5	172	140	130	160	110	95.5	175
Arm Span (cm)	171	158	181	141	131	162	114	92	182
Lower Segment (cm)	-	85	93	72	66.5	82	55	42	87.5
High Arch Palate	-	-	+	+	+	+	+	+	+
Joint Flexibility	-	-	+	+	+	+	+	+	+
Eye Examination	N	N*	N	N	N	N	N	N	N
Echocardiography	N	N*	MVP	N	Prolapse	N	MVP	N	MVP
CT Chest	NA	N	Bronchiectasis	N	N	N	N	N	Bronchiectasis
Lung Function Test	NA	NA	Normal	N	N	N	NA	NA	Obstructive
Serum Precipitins	NA	NA	Normal	NA	NA	N	NA	NA	N
α 1 Antitrypsin levels	NA	NA	Normal	NA	NA	N	NA	NA	N
Immunoglobulin levels	NA	NA	Normal	NA	NA	N	NA	NA	N

- *All patients had normal a antitrypsin level and serum precipitins for aspergillus.*
- *F = Father S1 - S6 = Siblings P = Patient*
- *M = Mother Na = Not Available*



Proband
Fig.2 - Family Tree

disorder in this condition. In Marfan Syndrome, Type I collagen disorder affects the elastometric complex which consists of elastin, fibrillin, microfibrillin associated proteins and the major collagents, type II and III[6]. Inherited as autosomal dominant, this can occur in 50% of the offspring or as forme frustae, as in our proband case. The defect in collagen may be responsible for the reduced tensile strength of the connective tissue leading to both increased susceptibility to infection and to bronchiectasis. All siblings in this study had some skeletal features of Marfan's Syndrome but only two had the complete criteria (two of cardiac, skeletal or eye abnormalities). The older of the two with the syndrome was bot asymtomatic and had radiological features of bronchiectasis. We can hypothesize, therefore, that this association also runs in families and is related to the basic defect in the collagen structure. Other congenital abnormalities such as Kartagener's Syndrome, congenital absence of bronchial cartilage and congenital kyphoscoliosis are associated with bronchiectasis. Unlike other pulmonary complications of this syndrome, the progress of bronchiectasis is amenable to modification with early institution of appropriate antibiotics and chest drainage manouvres. The second sibling with Marfan Syndrome can be observed closely for early features to avoid long-term damage. Whether or not it is worth screening, all family members of index cases irrespective of presence or absence of Marfanoid features is subject to debate. There is need for more family studies.

In conclusion, bronchiectasis in Marfan Syndrome is as a result of weakness in the collagen structure and runs in the family. There is a need for screening family members with Marfan Syndrome and institution of early measures to avoid bronchial damage.

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VANISHING LUNG SYNDROME

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Abstract: *'Vanishing Lung Syndrome' is a rare disorder, in which emphysematous bullae appear in the lung, which progressively enlarge, causing compression of the adjacent lung. The paucity of the disorder in the literature and rarity of the condition, prompts us to report this case.*

KEY WORDS : Emphysema, Emphysematous bullae, vanishing lung.

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INTRODUCTION :

In this disorder, emphysematous bullae appear in the lung, the alveolar walls gradually disintegrate to form large air spaces, with eventual atrophy of the lung and compression of the adjacent side[1,2,3]. The patients have little or no evidence of cough or respiratory infection[1], and finally die in respiratory failure[1].

This is a very rare condition. To our knowledge, our case is the first reported in the Indian literature.

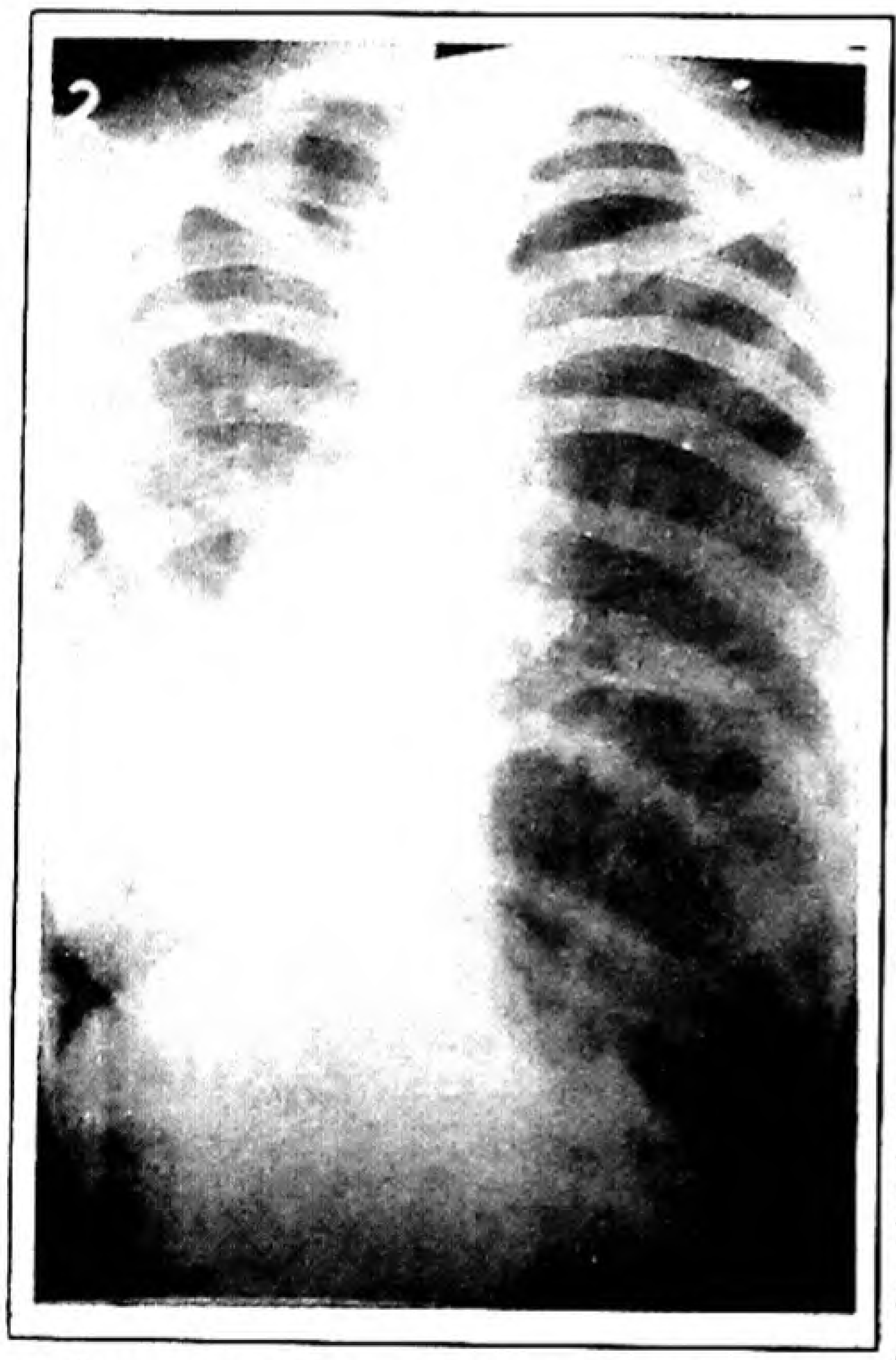

Figure 1: Chest radiograph showing hypertranslucent left side and shift of mediastinium to the right.

CASE REPORT :

An 18 years old female from Srinagar city was evaluated for complaints of low grade fever and non-productive cough of one week duration.

There were no symptoms pertaining to the involvement of any other system of body; and in her past there was no history suggestive of measles or tuberculosis or, any illness with particular reference to respiraty system or, any ailment requiring hospitalization or long term treatment. On examination she appeared to be of average built with pulse rate of 84 beats per minute, respiraoty rate of 18 per minute and normal blood pressure (110/70mmHg). Overall, her general physical examination was normal. On chest examination, the left side of chest appeared bulging, and shift of trachea to right side. Percussion note was hyperresonant on the left, and cardiac dullness was absent at its usual location. On the right side, anteriorly, the percussion note appeared dull upto the costal margin. The breath sounds were diminished on left side anteriorly and posteriorly. Apex beat was not localized and the heart sounds were more clearly heard on right side of the sternum in the forth and fifth intercostal space[5]. Rest of the systemic examination was normal.

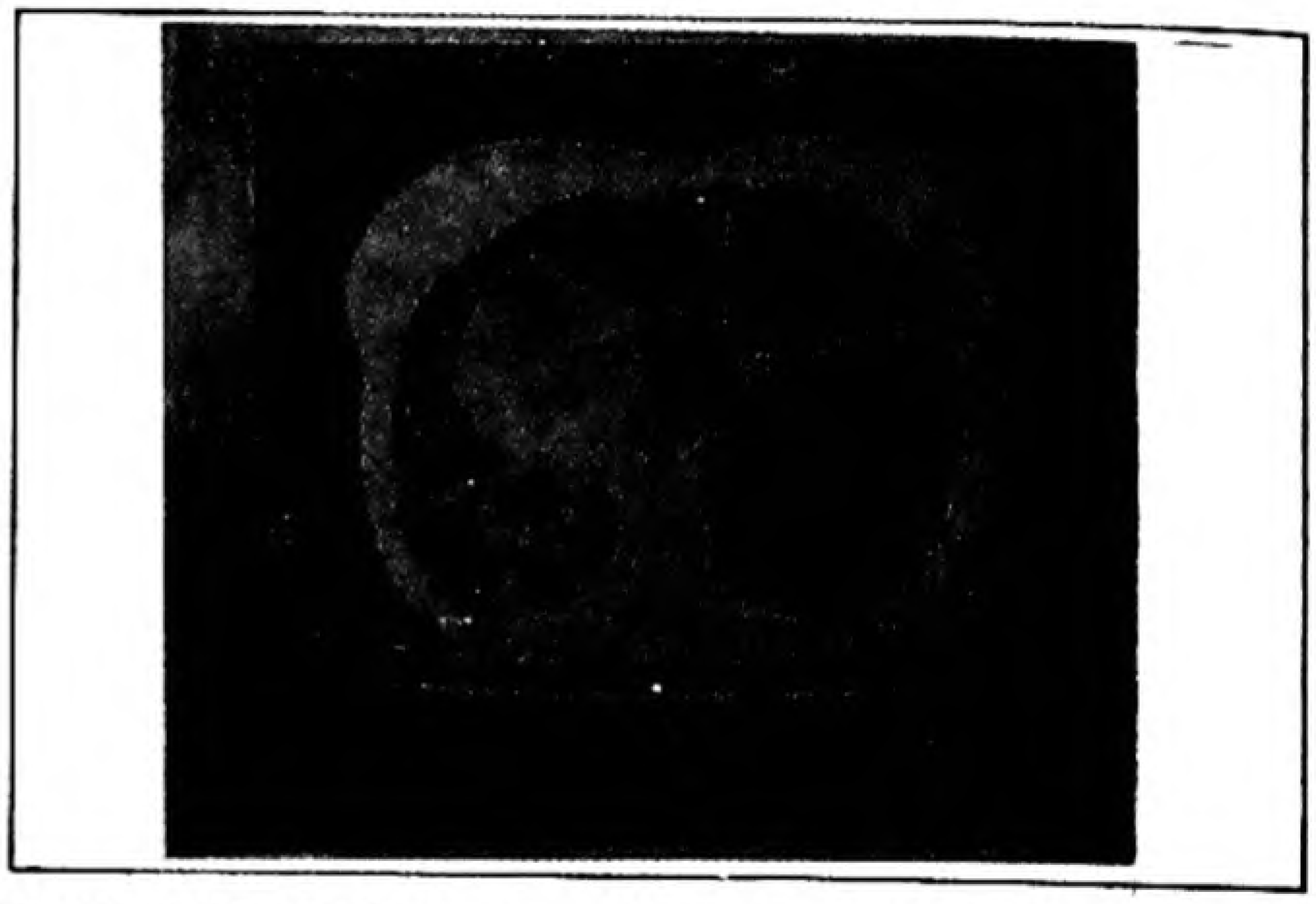

Figure 2: CT chest of same patient showing left hemithorax wider than the right, with overinflation and emphysematous air spaces and thickened septae in between.

On investigating, her hemoglobin was 11g/dL, and ESR, 05mm/hour. Her hemogram and and all other biochemical investigations were within normal range. Profile for tuberculosis and systemic lupus erythematosus was negative. Chest radiograph (Fig. 1) revealed decrease of right hemithorax with shift of trachea, mediastinum and heart to the same side. Left side showed increase of volume and translucency. Lung parenchyma and vasculature were not visible on left. There appeared thin walled emphysematous

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bullae on whole of the left side and the diaphragm on the same side was pushed down. Computed tomography (Fig.2), revealed the two halves of chest asymmetrical, left half more wider than the right because of overinflation of the lung; and shift of the mediastinum to the right side. On left side there were emphysematous spaces and reticular pattern between the overinflated air-spaces, and thickened septae in between. On CT, there was no evidence of any foreign body, hilar, parahilar or pleural pathology. Fibreoptic bronchoscopy revealed normal study. Pulmonary function tests revealed restrictive pattern with reduced vital capacity (2.9 litres), residual volume (900ml), total lung capacity (4.3 litres) and normal FEV_1/FVC (0.78). Ultrasonography did not show any cystic changes in abdominal viscera, and the facility for estimation of serum α_1-antitrypsin was not available.

DISCUSSION :

The disorder starts with appearance of emphysematous bullae where alveolar walls disintegrate, and large air spaces are created leading to lung atrophy[1], and progression occurs till death due to respiratory failure. The basic pathogenesis is not exactly known, however it has been attributed to possible respiratory myositis[2]. There is evidence of diaphragmatic weakness, and the condition is associated with systemic lupus erythematosus in one third of cases[2,3,4]. Lung function tests show a restrictive pattern. The disorder needs to differentiate from few other similar conditions. *Infantile lobar emphysema* is an obstructive distension of one lobe in an infant, often giving rise to severe dyspnea and necessitating surgical removal. There is a strong male preponderance and about a half have congenital cardiac abnormalities; and left upper or middle lobe is usually involved[1], and the disorder manifests in less than 6 weeks age. In lobar emphysema with bronchial atresia, there is complete atresia of the proximal bronchus, which may be patent peripherally. The left upper lobe is transradiant and hypoplastic[1]. *Macleod's syndrome* comprises of unilateral emphysema of a lung or lobe due to localized bronchiolitis or bronchitis. The pulmonary artery on the affected side is often small and there is irregular dilatation of bronchi with failure to fill the peripheral airways. The condition often occurs six months to five years after viral bronchitis, or follows tuberculosis in the childhood[1].

The presence of clinical and radiological features and restrictive pattern on pulmonary function testing favours the diagnosis of 'vanishing lung syndrome' in our case, who is under our follow up for future course, and may need further evaluation.

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A RARE PRESENTATION OF CYSTADENOMA OF APPENDIX AS GIANT RETROPERITONIAL MASS

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Abstract: *The mucinous cystadenoma of mucocle of appendix is generally found by chance during surgery. Regardless of its low incidence which is 0.3% of all resected appendices[1], this lesion is generally well known to surgeons. Some regard this lession as benign a result of obstruction of proximal lumen by fibrosis[2,3] and other believe it to be neoplasm of appendix[4,5]. Usually the mucinous cystadenoma of appendix is associated with pseudomyxoma peritonei but this correlation was not seen in our case.*

Key words: *Mucocele. Appendix. Computed tomography. Gelatinous mucous. pseudqmyxoma peritonie.*

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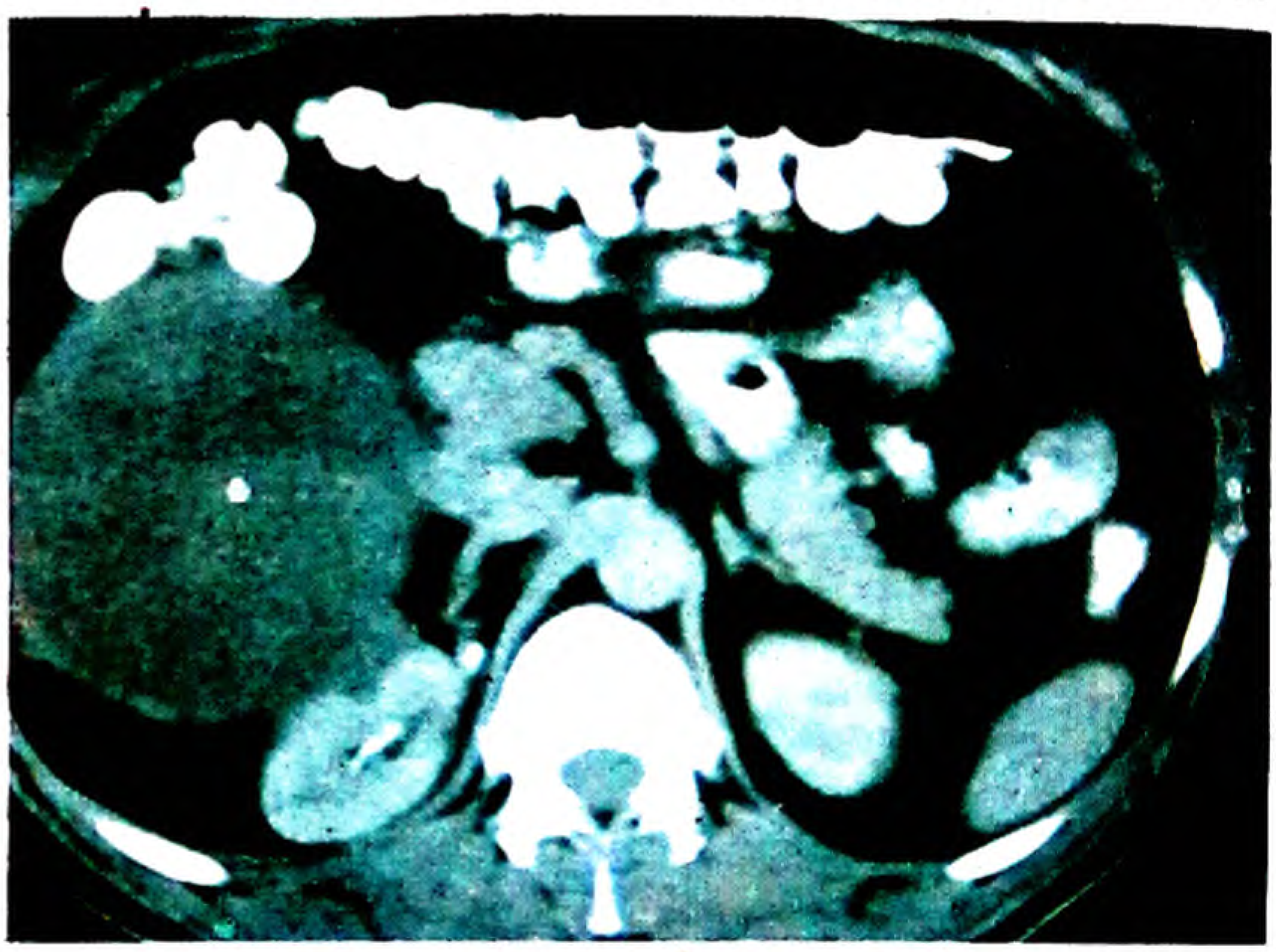
Case Report

Fifty-five years married male government employee by profession presented to the urology out patient with the history of mass in the right lumber area, progressively increasing in size for last nine years. Patient did not give any history of trauma or any history suggestive of intestinal obstruction, or acid peptic disease or of haematuria. There was no history of loss of weight or loss of appetite. Clinical examination revealed a huge retro peritoneal mass about 10cmx6cm in the right lumber area with upper and medial margins well defined, mass was non tender and was bimanually palpable and ballotable it did not move with respiration. Patient was subjected to routine investigations which confirmed Hb 9.8gm%, TLC 11.4 x10^9. Renal parameters were within normal limits. Transabdominal ultrasound confirmed both kidneys, liver and spleen were normal with a mixed ecognicity mass below the liver and anterior to right kidney. Patient was subjected to enhanced computed tomography of abdomen which showed a mass with fluid attenuation of 12-14 houns field along the side of asending colon, both kidneys and liver were normal, no pathology was detected in the small or large intestine. Patient was explored by trans peritoneal approach with many conditions in mind like Hydatid of paraverteble muscle, Lipoma of retroperitoneal area, mesentric cyst etc. But to our surprise there was a huge mass Fig 1, along the side of right colon in the retroperitoneal space adherent to underlying great vessels with peritoneum adherent to the mass medially. After sharp dissection we could lift the mass medialy and anteriorly, cyst was incised and lots of gelatinous material about eight liters were removed and after decompressing the cyst we were able to locate the origin of cyst which was tip of retroceaceal appendix. Excision of the cyst with appendicectomy was done and material and specimen was send for histopathological examination which showed cyst in communication with appendix lined by bengin mucous proliferating secreting glands at the tip of appendix with pools of mucin and few cells in the wall of cyst consistent with benign cystadenoma of appendix.



Discussion

Appendiceal mucocele describes the gross enlargement of the appendix from accumulation of mucoid substance

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within the lumen. It is a rare lesion comprising in only 0.2 to 0.3 percent of 43,000 appendecetomies reviewed[5]. Mucocele of the appendix and associated pseudomyxoma peritonie are a hetrogenous group usually seen together but in our case it was not associated with pseudomyxoma peritonie. Four histological sub types described in literature include retention cysts, mucosal hyperplasia, cystadenomas and cystadenocarcinoma, and prognossis are related to the subtypes. Appendiceal mucocele reportedly show female to male predominance 3:1 with a typical rim like calcification of mucocele on plain roentgenogram of abdomen or with parietal calcification found in contigunity with the ceacum on CT scan, which was not seen in our case. When considering Appendiceal mucocele the relationship with ovarian cystadenomas and synchronous large intestine tumors needs to be mentioned, common cause has been suggested and several authors consider mucosal hyperplasia and cystadenomas of appendix to be analogous to hyperplastic polyps and adenomasa of large intestine[6] the epithelial cells in cystadenomas are clearly proliferating rather than atrophic where as epithlium in true retention cysts such as in mucocele of mouth and gall bladder are atrophic or disapear completely as cyst are formed by obstruction of the main duct. In the present case we did not find obstruction in the proximal part of appendices thus in addition if the cystadenoma of the vermiform appendix also were a result of obstruction the epitthlium should have been atropic and not proliferative. Our observation support the notion of neoplatic origin of the mucinous cystadenoma of vermiform appendix.

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TRANSPUBIC APPROACH FOR REPAIR OF POST-TRAUMATIC HIGH URETHRO-VAGINAL FISTULA

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ABSTRACT: A five years old girl with continuous dribbling of urine following a vehicular accident was evaluated and the presence of high urethrovaginal fistula was confirmed by radiology and endoscopy. Through a transpubic approach urethra and vagina were repaired, bladder neck and posterior urethra were wrapped in a facial sheath from external oblique aponeurosis, and reimplantation of both ureters was undertaken with excellent post operative results.

Key words: Urethrovaginal fistula, traumatic urinary fistula, urethra, vagina, transpubic approach, transpubic repair of urethra

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Case report:

Seba, a 5 years old female child was admitted in our unit in July 1985 with history of persistent dribbling of urine of three years duration following a vehicular accident in which she sustained pelvic injury which was associated with vaginal bleeding. Abdominal exploration was performed immediately after the accident for rupture of bladder. She was on catheter drainage for several days and on removal of catheter the patient was left with persistent wetting. Her under clothes and trousers were always noted to be wet and when asked to pass urine she could pass only few millilitres which would well out of her perineal region. She was never able to pass urine in a stream. She had sought the advice of several clinicians without any use. On examination she had soggy perineum with multiple small superficial ulcers on either side of her genitalia. Suprapubic compression produced leakage of urine. Her routine investigations and blood chemistry including urea and creatinine levels were normal. Intravenous urogram demonstrated normal upper urinary tracts, good capacity bladder and leakage of urine into the vagina which was later confirmed on micturating cysto-urethrogram. Examination under anaesthesia and cysto-urethroscopy left no doubt about the presence of the fistula. Also noted were synaechia between the posterior and anterior vaginal walls high up in the vagina near the fistulous communication.

Abdomen was explored by a lower midline incision along the line of previous scar. Bladder was identified and severe adhesions with the abdominal wall and the pubes were lysed. Bladder neck was narrow which explained the good capacity bladder inspite of the fistula. The incision was extended down and symphysis was slit in the midline and splayed out with the help of retractors. Bladder was opened, as was also the bladder neck and the posterior urethra. The fistulous opening was just distal to bladder neck. The urethra was separated off the vagina and fistulous tract divided by sharp dissection. Both vaginal and the urethral defects were repaired. The ureteric orifices were close to the region of dissection. To facilitate the reconstruction of narrow bladder neck both ureters were reimplanted higher up using Politano-Leadbetter technique. Following reconstruction the bladder neck and the posterior urethra were wrapped in a facial sheath from the external oblique aponeurosis. Both the ureters and the bladder were drained supra-pubically. Another catheter was passed into bladder perurethra. The symphysis pubis was approximated by No:1 prolene sutures and the abdomen closed.

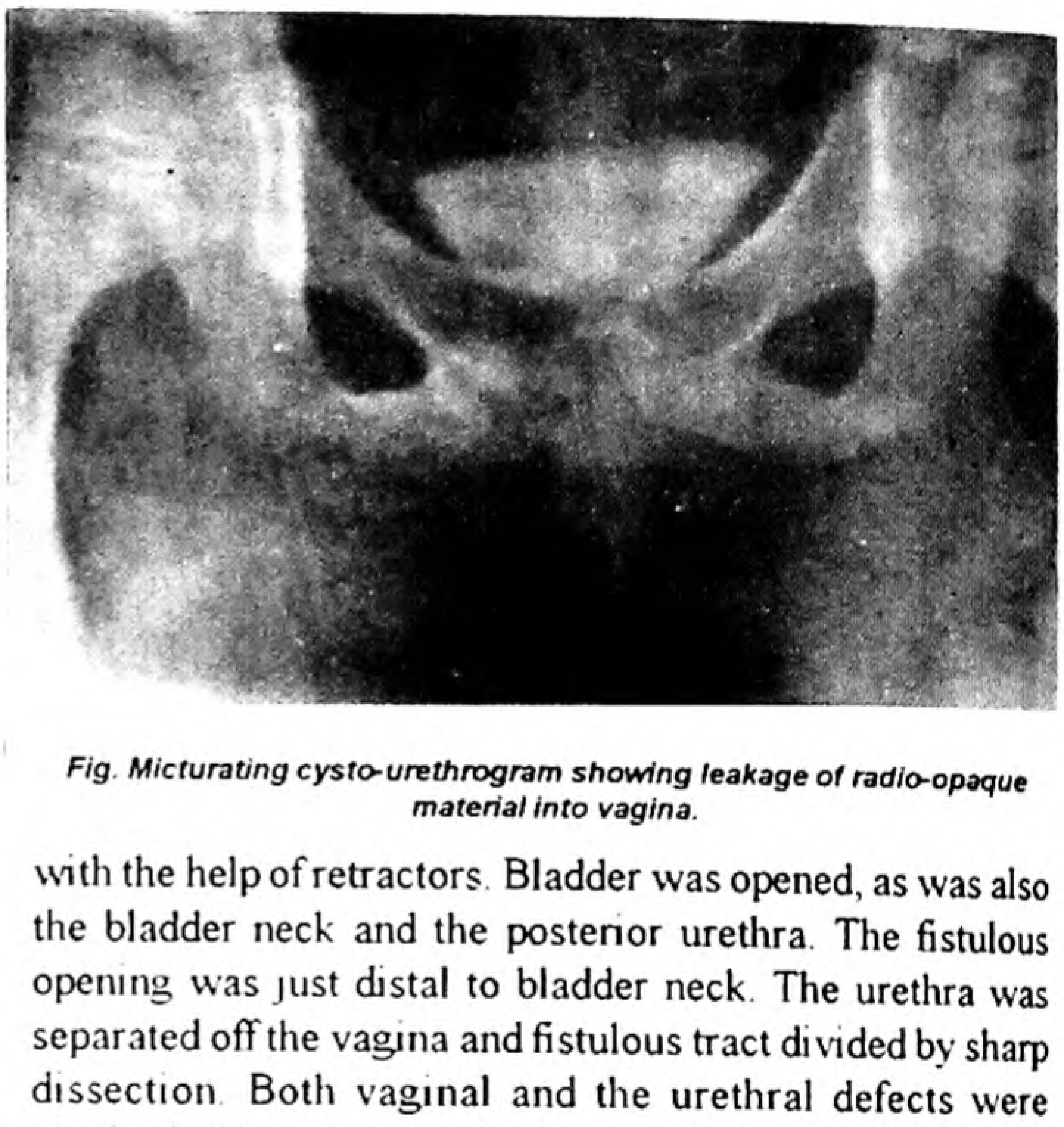

Fig. Micturating cysto-urethrogram showing leakage of radio-opaque material into vagina.

Patient had an uneventful post operative course. Both

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the ureteric catheters were removed on the 10th day and the urethral catheter two weeks after operation. Suprapubic catheter was clamped after three weeks. Patient had some difficulty in voiding initially but this ultimately improved, enabling us to take out the suprapubic catheter. For first few weeks after surgery she had a high residual urine in the bladder on ultrasonography. However with passage of time she improved and is now able to void completely and normally over a follow up of more than fifteen years. Micturating cystourethrogram one year after surgery revealed a normal urethra and bladder without any leak.

DISCUSSION

Urethral injury in girls with pelvic trauma is uncommon and there were only 30 cases in literature till 1992(1). In a series of 9 patients reported by Williams seven children had proximal urethral injuries and a urethrovaginal fistula with urethra destroyed over a considerable length which emphasises the potential morbidity of these injuries[2].

The diagnosis of urethral rupture should be considered in cases of post traumatic pelvic fractures, deep vaginal lacerations, inability to void and following unsuccessful attempts at catheterisation(3). McAleer et al reported that from the patients of genitourinary trauma in children 89% of the patients can be managed without surgical therapy except those with gross hematuria or uncontrolled blood loss[4].

Transpubic approach has been used sporadically in the obstetrical practice, urological practice and for operations of rectosigmoid since long. Need for this procedure has been recognised more and more recently. This approach was necessary in our patient as the level of fistula was too high for an approach through perineum and too low for an approach through abdomen. Direct access to the fistula site rendered the repair of urethra as well as vagina easy.

Symphysiotomy is an aid to obstetric delivery was described as early as 1777 by Segault(5). More than 50 years ago Walker(6) used this method for removal of cancer of the prostate. In 1973 Morales(7) and Waterhouse et al(8) described their experiences of this procedure in treating various urological problems. While the anatomy related to this procedure had been well highlighted by the former, the latter have described the technique of operation in detail. Anxiety has been expressed about the post operative morbidity and late orthopaedic difficulties from time to time. Some authors have preferred excision of a wedge of pubic bones to symphysiotomy for better exposure and as a safeguard against the dislocation of sacro-iliac joints. We did not notice any such problem after symphysiotomy. We feel that the ligaments in childhood are soft and stretchable and hence tearing is not a problem and good exposure can be obtained by symphysiotomy without any danger of dislocation. Gigli saw has been used in adults but this is not needed in children where the cartilagineous symphysis is easily divisible by the sharp cutting diathermy.

Our patient was freely ambulatory within three weeks of surgery. Due to extensive dissection however these cases have some initial difficulty in voiding which they overcome spontaneously. We feel that this form of treatment is ideal for the type of problem under discussion, particularly in childhood when it is far less problematic than in adults in terms of bleeding during surgery, post operative ambulation and late orthopaedic complications.

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CONGENITAL HYPOTHYROIDISM: DOSE A TECHNETIUM-99M THYROID SCAN HELP?

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Abstract: *Congenital hypothyroidism is a relatively common problem and early recognition may prevent neurological and other sequelae. A patient of congenital hypothyroidism presumed to have organification defect is reported and the role of technetium-99m thyroid scan in such a situation is discussed.*

Key Words: *Thyroid, Congenital hypothyroidism, Technetium-99m thyroid scan.*

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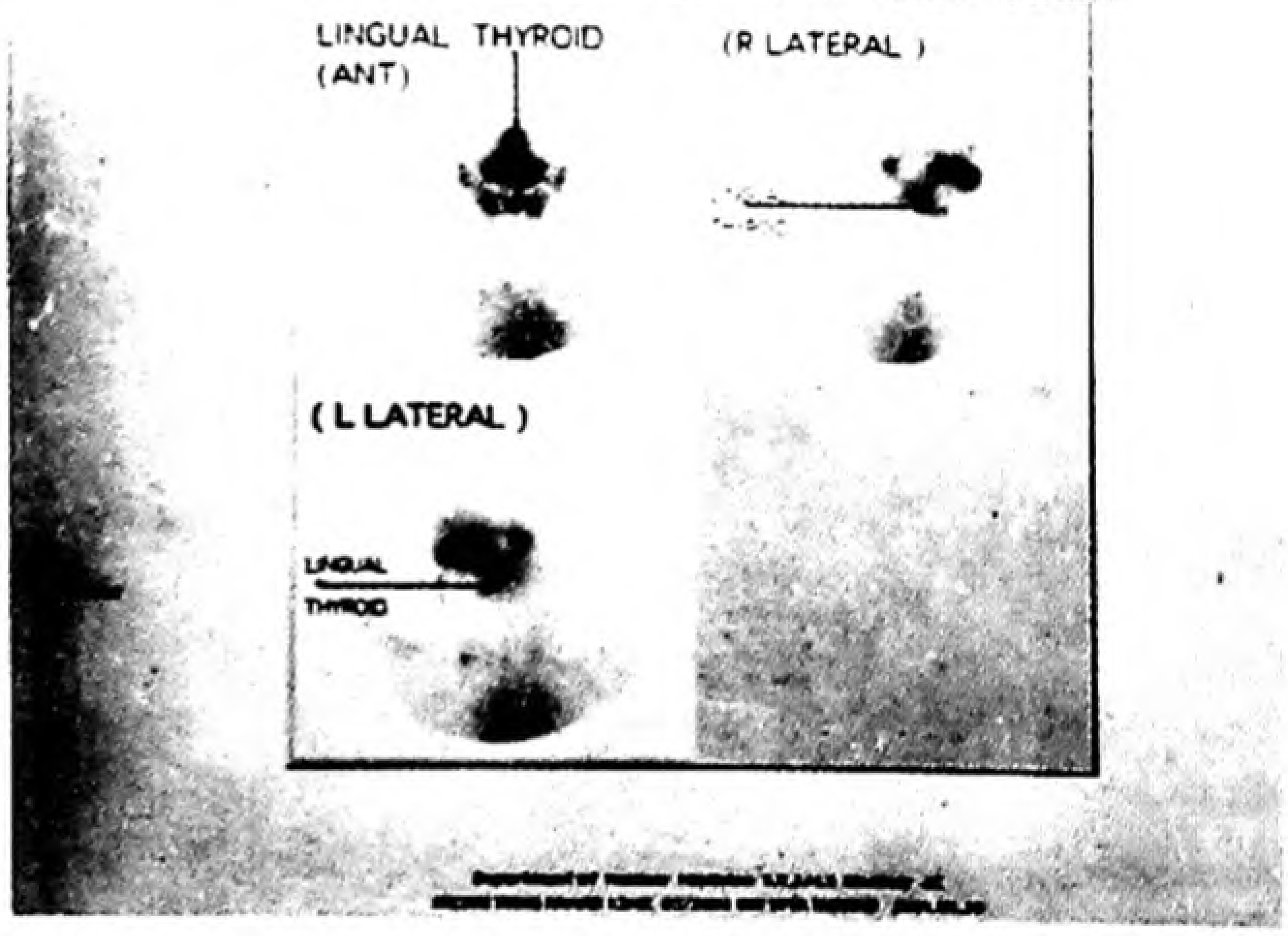
Introduction

Hypothyroidism may occur at birth (congenital hypothyroidism) or at any time during childhood or adolescence (Juvenile hypothyroidism). Because of importance of thyroid hormone for normal brain growth and development in the first 2 years of life the clinical considerations are different for infants, children and adolescents. Thyroid agenesis or dysgenesis is the primary cause of congenital hypothyroidism. Congenital hypothyroidism may also be caused by defective biosynthesis of thyroid hormone which frequently results in a goiter. Transient congenital hypothyroidism may also occur as a result of transplacental passage of maternally ingested goitrogens (e.g. iodide expectorants, antithyroid drugs or maternal antithyroid antibodies).

Case Report

A twelve years old male child being treated for congenital hypothyroidism was referred to the Department of Nuclear Medicine at Sher-i-Kashmir Institute of Medical Sciences, Soura, Srinagar for a perchlorate discharge test to rule out thyroid organification defect. The patient was examined and evaluated. He was the eldest son of his mother and was born through a normal delivery at full term. At the age of 1 year he was seen by a paediatrician for slow mentation, lethargy and chronic constipation. A diagnosis of congenital hypothyroidism was made by documenting decreased serum concentration of total T4 and elevated serum concentration of TSH. Subsequently the child was put on thyroid replacement therapy (ELTROXIN). General examination except for a relatively mild stunting of growth was unremarkable. Symptomatically, clinically and biochemically the patient was euthyroid. There was no palpable or visible swelling in the neck.



Photgraph Showing an ectopic lingual thyroid with absence of uptake thyroid gland area.

Method

The patient was put off oral eltroxin for 8 weeks. After being 8 weeks off eltroxin the estimated serum T4 level was 3ug/dl and TSH was 15 uIu/ml. After intravenous injection of 1 mci of Tc-99m pertechnetate a thyroid scan was performed on a gamma camera interfaced to a computer. An anterior, right and left anterior oblique static views of 5 minute duration each were taken. No thyroid uptake was seen in any of the views. An abnormal tracer uptake was seen above the hyoid bone in the anterior view, which was confirmed to be sub-lingual in the oblique views. A diagnosis of thyroid agenesis with an ectopic tissue in the lingual site was made. One week later to reconfirm that the patient had thyroid agenesis with a hypofunctional ectopic thyroid tissue and not an organification defect, a perchlorate wash out test was planned. Two hours after the oral administration of 25 microcuries of I-131, no uptake was observed in the thyroid

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gland area of neck. The uptake was remeasured at hourly intervals for next 4 hours and again no uptake was observed in the thyroid gland area of neck. However, an uptake measuring from 1.3% to 1.8% was seen at suprahyoid region (ectopic tissue). Since there was no uptake in the thyroid, perchlorate was not given to the patient and the discharge test abandoned.

The patient was confirmed to have congenital hypothyroidism resulting from thyroid agenesis with a hypofunctioning ectopic lingual thyroid and not an organification defect presumed earlier. He was asked to resume the thyroid replacement therapy.

Discussion

Congenital hypothyroidism unlike most thyroid diseases affects males and females equally. The severity of symptoms and physical findings correlates with the degree of hypothyroidism. Although a newborn rarely may have some physical features of hypothyroidism in the first week of life, usually it is not apparent. The symptoms that develop in the first two months of life are feeding problems, lethargy and constipation. Physical findings include coarse facies with large open fontanelles, large protruding tongue, hoarse cry, umbilical hernia, cool, dry, mottled skin, hypotonia, and delayed development. Severe congenital hypothyroidism is characterized by short limbs, epiphyseal dysgenesis, impaired physical growth and development and mental retardation. The diagnosis of congenital hypothyroidism is made by documenting decreased serum concentration of T3 & T4 and elevated serum concentration of TSH. Assessment of skeletal age (e.g., by knee x-ray) may show retardation of skeletal maturity to less than 36 weeks gestation, suggesting intrauterine hypothyroidism. Technetium-99m (Tc-99m) which is a near physiological analogue of iodine is a very useful isotope to study various aspects of congenital hypothyroidism. A Tc-99m thyroid scan in a patient of congenital hypothyroidism may show:

a. Absence of Tc-99m uptake in thyroid bed indicating thyroid agenesis.
b. Increased Tc-99m uptake in a normally positioned gland implies an enzymatic defect in thyroid hormone production.
c. An ectopic gland which is demonstrated by abnormal localization of Tc-99m uptake.

Conclusion

A technetium-99m thyroid scan prior to initiating therapy may be helpful in ascertaining the etiology of congenital hypothyroidism, which may have prognostic and genetic implications. In the absence of mass screening programmes for hypothyroidism this may also enable genetic counseling for families of children with less common familial forms of congenital hypothyroidism (i.e., dysharmonogenesis). Any future surgical procedure on neck may need to be modified in view of functioning ectopic thyroid tissue detected on a Tc-99m thyroid scan.

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SURGICAL TREATMENT OF PATHOLOGICAL FRACTURES OF LONG BONES

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Perspective

Although pathological fracture, strictly speaking, is mechanical failure of abnormal bone under trivial stress or even spontaneously, the usual connotation implies a fracture or impending fracture due to metastatic malignancy.

Recent rapid oncological advances in management of metastatic malignancy have not only led to increased survival, but also raised the spectrum of increased skeletal metastasis with attendant pain, disability, destruction, and destabilisation, which threw a gauntlet at technological and surgical endeavours to strengthen and stabilise the "weak links" of skeletal segments. Improved implant design and surgical techniques are in a constant race to keep pace with increasing demands for secure, stable and durable stabilisation of pathological fractures and lesions at risk.

Magnitude of Problem

In U.S.A., cancer is the second leading cause of death [1] with annual diagnosis of 1.2 million new cases-half of them bone seeking tumours. One in three suffer from invasive cancer[2]. Breast cancer alone strikes 1 in 9 women worldwide. In U.K 130000, most of them with skeletal metastasis die of cancer every year, while only 1.1% die of primary bone tumours[3].

Skeleton is the third commonest site of metastasis behind lungs and liver. Metastatic malignancy is the most common skeletal neoplasm. Approximately 70% disseminated cancers result in skeletal metastasis with 20% ante-mortem and 50% post-mortem diagnosis but less than 10% develop pathological fractures in need of surgical intervention[4-7]. While any tumour can metastasise to bone, five bone seeking tumours-breast, lung, prostate, kidney and thyroid- account for 80% of skeletal metastases. Carcinoma of breast and prostate have the highest reported incidence of skeletal metastasis with autopsy rates of 85% and 50-70% respectively[8,9].

Axial skeleton is more commonly involved than appendicular skeleton. Most common are spine, ribs, pelvis, skull and proximal femur. Metastases of spine, ribs and pelvis-even after fracture-can be treated effectively by local radiation and temporary bracing. Fractures of long bones, however, are much less amenable to conservative management. Femur accounts for 65% of surgical intervention. Humerus, periacetabular pelvis and spine account for most of the rest.

Survival

Statistics indicate that metastatic breast, myeloma and lymphoma have a mean anticipated survival of 28 months after surgical intervention, prostate and kidney approximately 20 months and lung only 6 months[2,4,5,6]. Since 1970s, 5-year survival for prostate, breast, kidney and thyroid increased significantly while the outlook for lung remains virtually static[2].

Orthopaedic Goal

The role and goal of modern orthopaedic management of metastatic malignancy is to gain pain relief, preserve or restore function and achieve comfort and quality of life. This role has become passionately aggressive and increasingly pre-emptive in recent years. In addition, the recent trend of concentrating radiation to a brief time span and reduced total dose is conducive to bony union in actual and impending pathological fractures and has further aided the orthopaedic surgeon.

Prophylactic Fixation

Evolution of clear clinical concepts and objective criteria for prior identification and prophylactic fixation of metastatic lesions with impending fractures helped to contain the numbers of actual fractures. We find that Mirels criteria (Tables 1&2) offer a simple and reliable objective scoring system of quantifying the lesional risk of a fracture and indication for prophylactic fixation[10].

Table 1: MIRELS CRITERIA-OBJECTIVE SCORING SYSTEM(8)
(Based on plain radiographs only)

	Points			
	3	2	1	
Location	Peritrochanteric		Lower extremity	Upper extremity
Type lesion	Lytic		Mixed	Blastic
Cortical extent	>2/3		1/3-2/3	> 1/3
Pain	Functional		Functional moderate	Moderate

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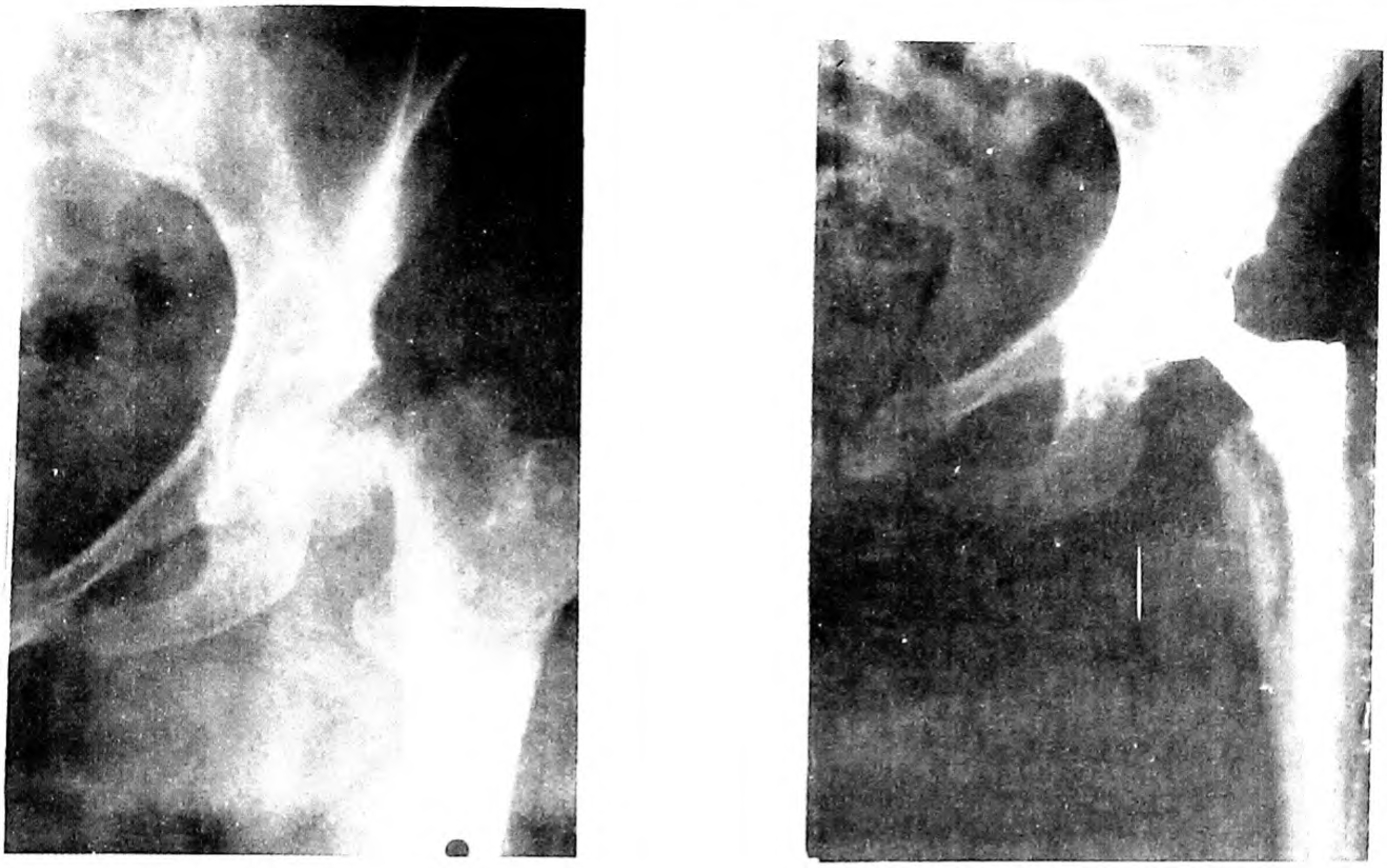

Fig 1a & 1b. Fracture neck of femur secondary to carcinoma of lung, treated by total hip replacement.

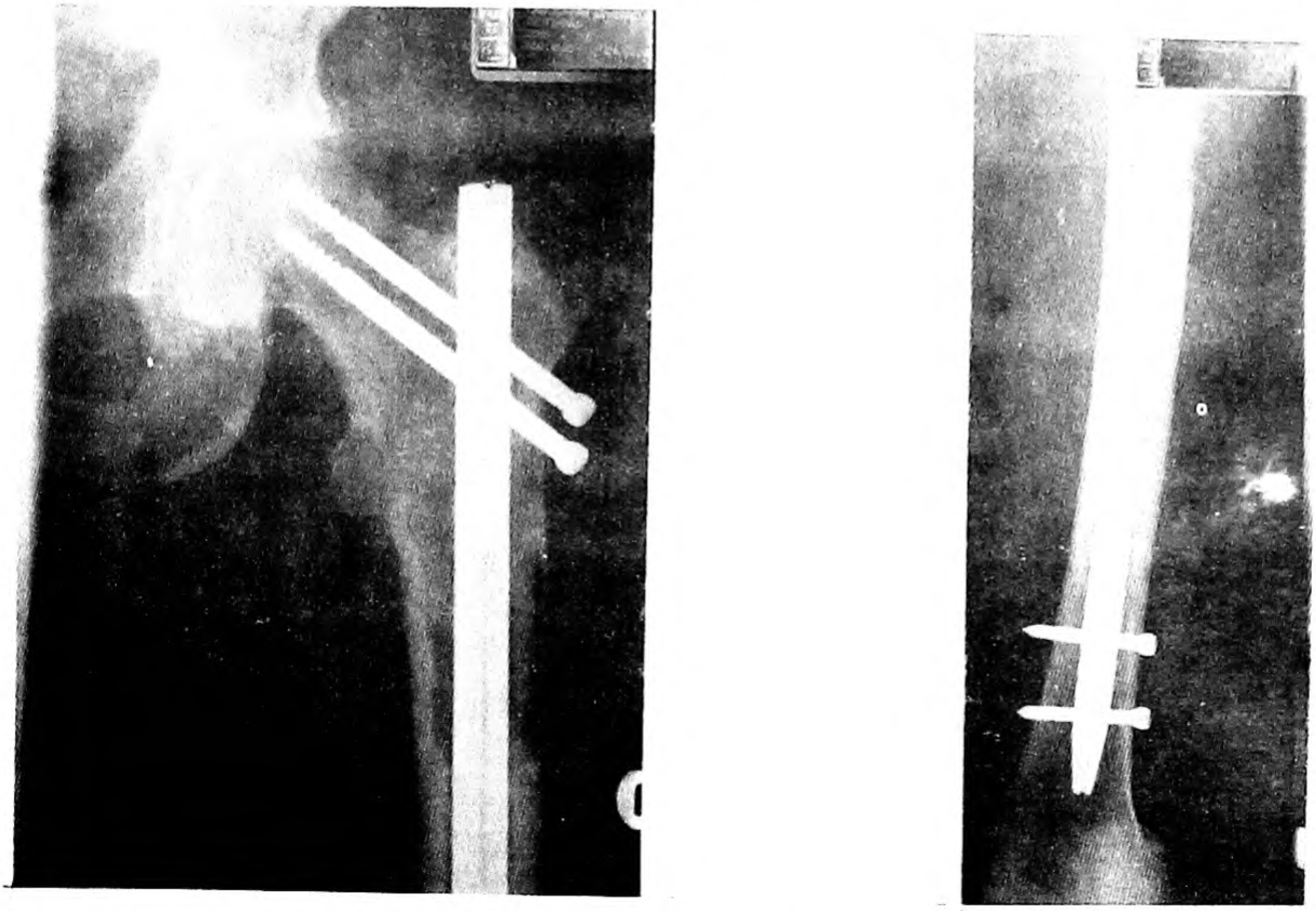

Fig 2a & 2b. Prophylactic reconstruction nailing of proximal femoral metastasis secondary to carcinoma of breast with Mirels score of 12

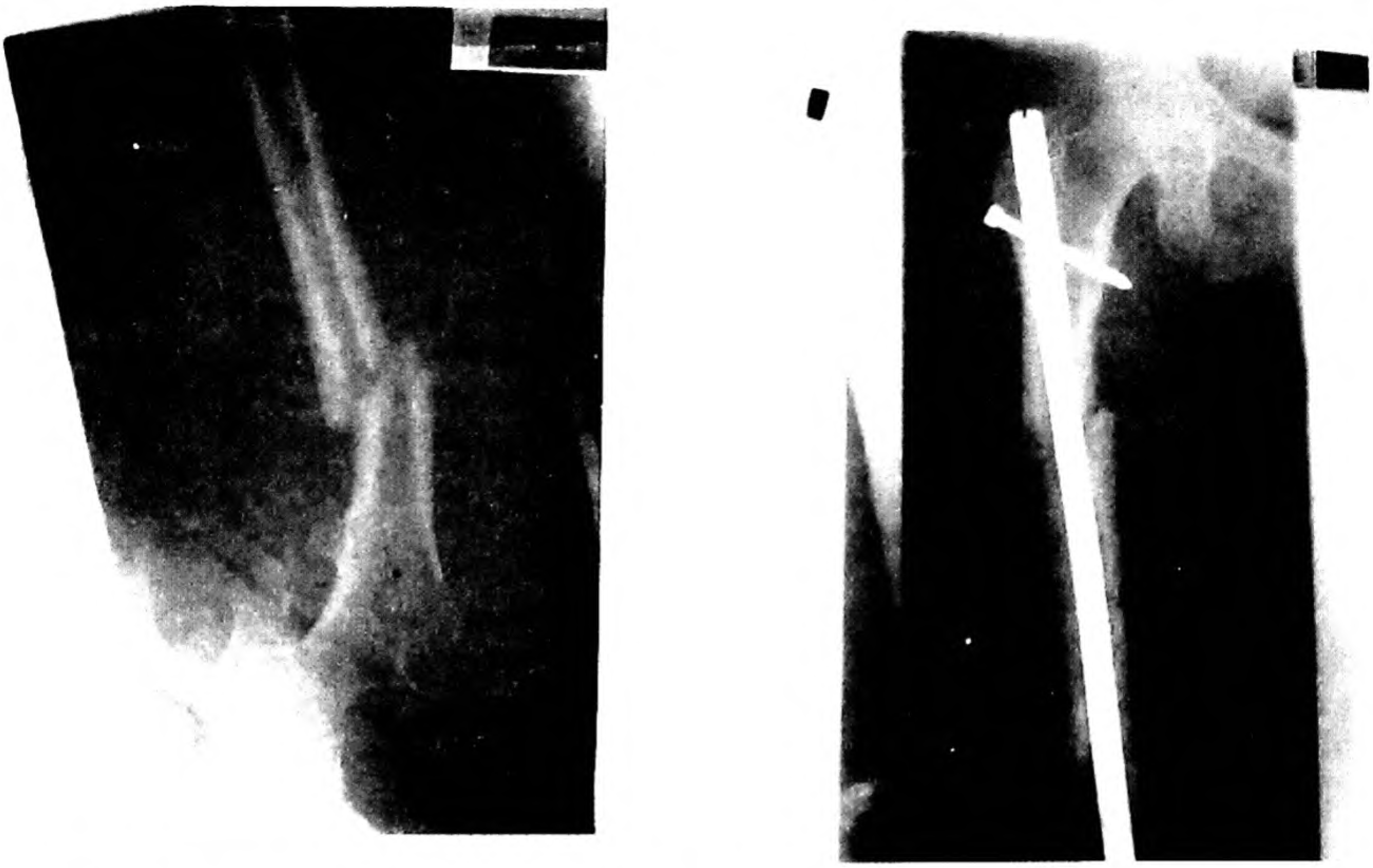

Fig 3a & 3b. Fracture shaft of femur secondary to carcinoma of breast, treated by Interlocking nail.

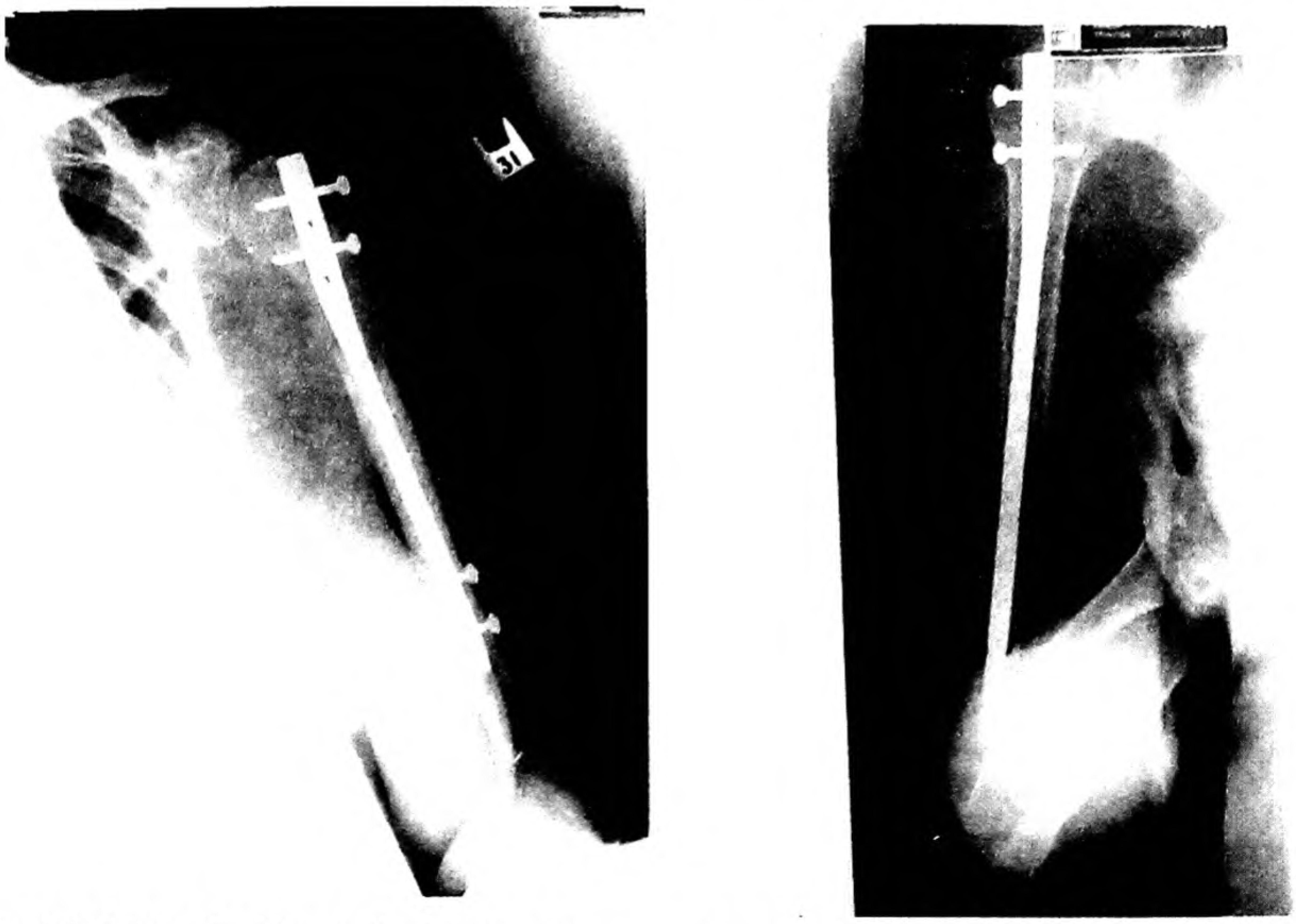

Fig 4 & 5. Interlocking nail of shaft of humerus for pathological fractures of proximal and distal humerus respectively.

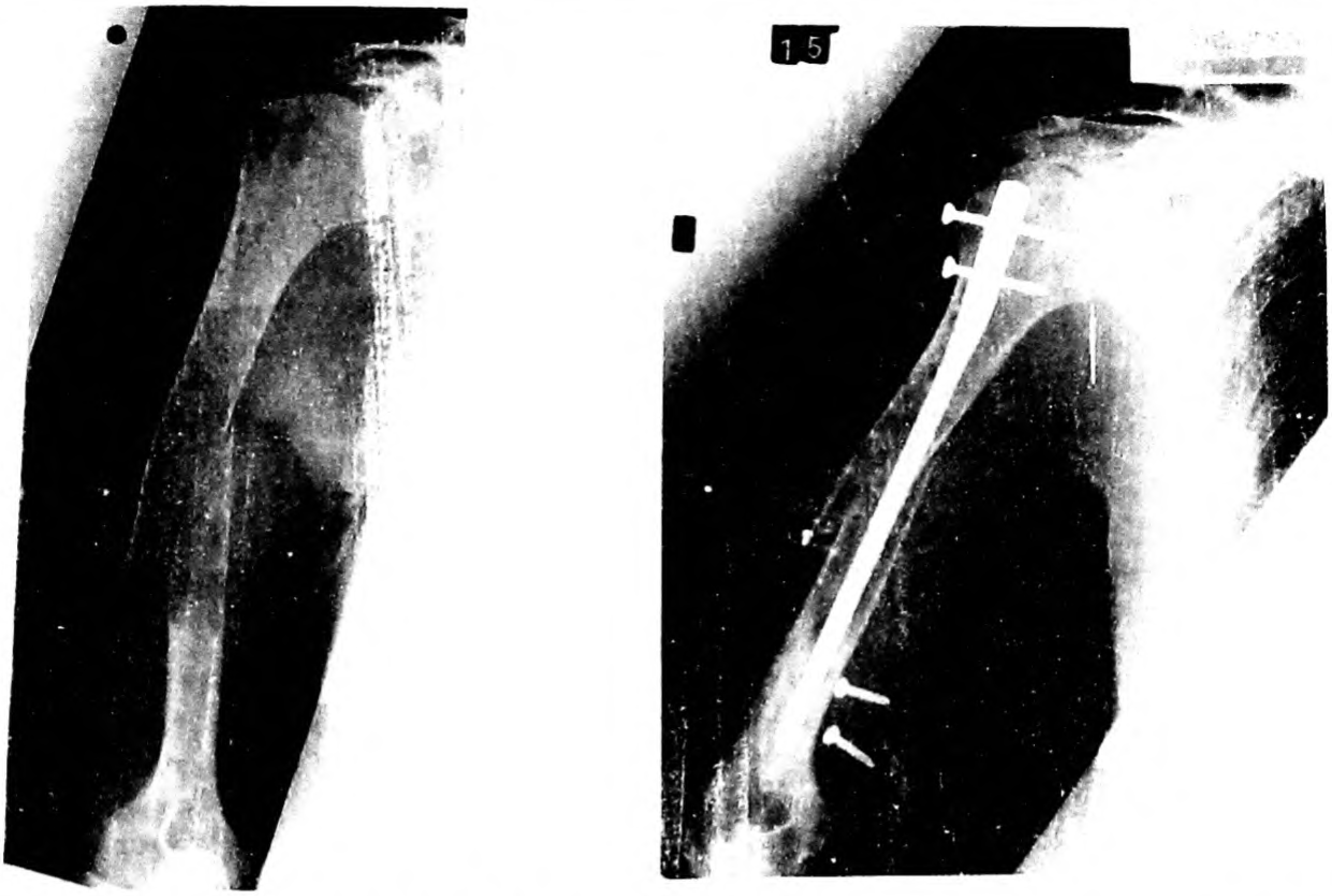

Fig 6a & 6b. Pathological fracture of shaft of humerus secondary to extensive myelomatosis, fixed with Interlocking nail. Distal screws however, are not locking.

Table 2: RISK OF FRACTURE BY MIRELS OBJECTIVE SCORING SYSTEM[10]

Score	Fractures (%)
≤ 6	0
7.	4
8	15
9	33
10	72
11	96
12	100

Indicative scores for fixation:

Score ≤7 no internal fixation
Score ≥9 internal fixation
Score = 8 Consider C T scan, internal fixation and

FRACTURES OF LOWER EXTREMITY

FEMUR

Frequency of lesions and biomechanical load bearing characteristics are unique in fixation of femoral metstases. The multitude of fixation devices include cannulated screws, plates, dynamic hip screw and plate, supracondylar screw/plate, intramedullary nails (including standard, reconstruction, retrograde and Enders nails), hemiarthroplasty, total hip arthroplasty, proximal femoral replacement, distal femoral replacement, total femoral replacement and allograft reconstruction. The spectrum of available devices calls for individualised fixation.

Proximal Femur

Fractures of femoral neck demand prosthetic replacement (Figures 1a & 1b) with adherence to the following criteria: 1) reestablishment of rigid contact between prosthesis and distal femoral neck with appropriate augmentation by methylmethacrylate, 2) long stemmed prosthesis to enhance intramedullary fixation and provide prophylaxis for distal femur and 3) restoration of femoral length to maximise hip joint stability and minimise limb length discrepancy. If femoral head or / and neck only are involved, endoprosthetic replacement is the logical choice. In the event of acetabular involvement and/or associated degenerative changes total hip arthroplasty should be performed. More extensive bone destruction, extending to peritrochanteric and /or subtrochanteric area, necessitates customised proximal femoral replacement.

Intertrochanteric fractures and lesions are usually treated by open reduction and internal fixation with conventional compression hip screw and plate after debulking the tumour mass, removal of structurally inadequate bone and supplementation with methylmethacrylate. Most surgeons use methylmethacrylate to fill the pathological defect. Harrington, however, advocates injection of acrylic cement as far proximally around the compression screw as possible to reduce the chance of hip screw cut out and distally to a point well below the level of medial cortical destruction[4-6].

Tumour debulking increases the efficacy of subsequent irradiation. Prosthetic replacement is reserved for more extensive lytic lesions of the area. Zickel type[11] nail or reconstruction nail with methylmethacrylate is ideal, if lysis extends to subtrochanteric region.

Subtrochanteric fractures, fixed with compression screw and plate even if augmented by methylmethacrylate, are doomed because torsional and shear forces at the level of first screw lead to metal fatigue and failure. Besides, subtrochanterc fractures are frequently associated with lesions of distal femur, which require prophylactic fixation before radiotherapy. Zickel type nail[11] or reconstruction nail, augmented by methylmethacrylate intra-lesionally, provides durable fixation. Both these devices are extremely strong, easily introducible and effectively stabilise the femur from head to the distal end. Distal locking of the devices enhances fixation (Figures 2a &2b)

Shaft of Femur

Diaphyseal fractures of femur are relatively uncommon. Fracture fragments may telescope with inevitable shortening unless fixation is accomplished by an intramedullary nail with proximal and distal interlocking screws. Such a device usually avoids opening the fracture site. However, in a fracture through a large exophytic tumour, direct de-bulking of tumour markedly enhances the efficacy of subsequent low-dose local irradiation and possibility of ultimate bony union.(Figures 3a & 3b).

Distal femur

Fractures of distal femoral metaphysis have been traditionally fixed by a compression screw and plate or a blade- plate. Frequent delayed failure of these devices has shifted the recent trend to use supracondylar nail with or without augmentation by intramedullary methylmethacrylate[4,12]. In solitary distal femoral lesions, distal femoral prosthetic replacement is an option. If there is bony lysis in both distal femur and proximal tibia, customised total knee replacement or arthrodesis of knee using long intramedullary rod appropriately bent to reestablish normal valgus alignment and slight knee flexion may well be the logical choice.

Tibia

Tibial metastases are infrequent. Solitary proximal metstasis in the context of potentially long survival is best treated by radical resection, customised total knee replacement and possibly gastrocnemius flap for reconstitution of quadriceps mechanism. Diaphyseal fractures are fixed with interlocking nail.

FRACTURES OF THE UPPER EXTREMITY

Shaft of Humerus

Pathological fractures of humerus are most common in diaphysis. These are problematic because of a rather narrow medullary canal with preponderance of cortical bone at this level. When the proportion of destruction is sufficient to cause a fracture, bone union often fails despite adequate fixation even in the absence of extensive local postoperative irradiation. In addition, humerus, unlike femur, is subject to repetitive distraction forces with tendency to separation of fracture fragments in the event of relatively flimsy fixation with devices such as rush rods. Plate and screws are effective, but require extensive dissection around the radial nerve and if irradiated before fixation, the risk of damage to the nerve is even worse. Late failure of plates is common in non-union of fractures. For these reasons, interlocking devices such as Biomet nail offer excellent fixation because they afford the desired strength and effective resistance to varus, torque, and distraction forces (Figures 4-6).

Proximal Humerus

Pathological fractures of proximal humerus typically result after extensive destruction of humeral head and adjacent metapyhsis. It is common to see lysis of adjacent glenoid as well. With rare exceptions, proximal humeral prosthetic replacement is the answer. Because of frequent involvement of rotator cuff and its attachments and variable destruction of glenoid, many surgeons tend to use large prostheses. Patients achieve a maximum of 90 to100 degrees of flexion, but enjoy pain relief, adequate function and joint stability.

Distal Humerus

Supracondylar fractures of humerus are difficult to stabilise. These fractures are better fixed with two rush rods inserted retrograde through medial and lateral epicondyles, but as the rods usually cross within the medullary canal at or just above the fracture site, fixation needs augmentation by intramedullary methylmethacrylate.

Radius and Ulna

Metastases of radius and ulna are extremely rare. Diaphyseal fractures of radius and ulna are easily fixed with closed intramedullary rods.

Relief of pain is the most important criterion of success of surgery. This must, however, be considered in the context of avoidance of complications and resumption of preoperative level of ambulation. The quality of bone and soft tissue envelope are vital to facilitate general care, minimise complications and expedite mobilisation. Surgical ability for restoration of bone and joint stability should not interfere with the surgeon's perception to recognise a pre-terminal patient, whose management is beyond the realm of any reasonable attempt at surgical intervention. It is of utmost importance that the surgeon must gain the confidence of the patient and relatives. The prognosis for survival of patients with such fractures is difficult to predict and should be assessed in consultation with an oncologist. Before fracture stabilisation, patient should enjoy a life expectancy of at least 6 weeks and a general condition well enough to tolerate major surgery. Life expectancy of at least six months is appropriate before undertaking extensive reconstruction of acetabulum, hip or knee joint.

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CONGENITAL ERYTHROPOIETIC PORPHYRIA (GUNTHER'S DISEASE) PRESENTING AS ANTERIOR STAPHYLOMA AND BLINDNESS

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Abstract: *Photographs and brief write up of CEP is presented in view of its rarity alongwith a description of this interesting condition and review of literature. CEP is a rare disease, inherited in an autosomal recessive fashion in which the eye is effected not so often and may be a diagnostic dilemma. We report a case of Gunther's disease who presented in the department of opthalmology as anterior Staphyloma.*

A 30 year old male, resident of Bogdang, Nobrah Ladakh came under observation there and was refered to the opthoclinic of SMHS hospital with a two month history of loss of vision right eye starting with deep pain, photophobia and diminution of vision.

The abnormalities noted at presentation included anterior staphyloma in the right eye and vesicular and bullous eruptions on face and hands reportedly since childhood. The eruptions were exacerbated in sunlight and would rupture spontaneously with a watery discharge. On specific questioning, he revealed history of passing pink urine since childhood. He was not an alcoholic, drug history was not significant. On close questioning, the patient revealed similar cutaneous photosensitivity in his brother and grand aunt. The family tree was constructed. On examination he had few vesicular eruptions on face and hands, widespread scarring and crusted lesions in the same areas, blackish, deformed nails, hypertrichosis of face and hands, brownish discoloration of upper incisors and canines and spleen palpable 4 cms below costal margins.

EYE EXAMINATION :

	Right eye	Left eye	
Lids	Normal	Pigmented lid margins	
Sclera	Anterior staphyloma	Perilimbal scleral thinning And excavations with a bluish color of uvea shining through floor of excavation	
V/A	No PL	V/A 6/6	
		Cornea	normal
		Conjuctiva	normal
		AC,pupil,iris	normal

Where PL = perception of light, V/A = visual activity

Investigations showed mild anemia (10.2gms/dl hemoglobin) and normal counts as – Reticulocytes (1.0%), E.S.R(40mm /1 hr. wintrobe's method), P.B.F(RBC'S hyprochromia +ive,anisocytosis +ive WBC'S normal),Bilirubin (0.4mg / dl), L.D.H(280 u/l),Soret band assay(+ive at 401-470 mm), UV flourescence of urine also positive).

URINE PORPHYRIN LEVELS :

1.	Uroporphyrin	5700
2.	Hepta carboxyporphyrin	290
3.	Hexa -do-	74
4.	Penta -do-	370
5.	Tetra -do-	1500

None of the above is in normal range. Their values are 10 to 30 times above the normal prescribed range. All porphyrin levels show the presence of isomer I many times in excess of isomer III (these investigations on urine were done at Smithkline – Beecham lab, U.S.A.)

USG of the abdomen revealed splenomegaly and a slight increase in the calibre of the portal vein. A diagnosis of CEP was established. An evisceration was done on the patient and patient called for follow up after a week.

DISCUSSION :

CEP first described by Gunther[1]. Pink urine or onset of severe cutaneous photosensivity in infancy (or rarely in adults) should suggest the diagnosis of CEP. Elevation of both the urinary and erythrocyte porphyrins is highly suggestive as this pattern is quite specific for CEP or renders EPP, PCT, HCP &VP unlikely. HEP may also be present in childhood with photosensitivity and increased porphyrin excretion and its clinically indistinguishable from CEP, but diagnostic criteria include urinary isocoproporphyrin and excretion of zn protoporphyrin in urine[2] (both of these are absent in our case) and increased erythrocyte zn protoporphyrin. Presentation with eye changes in CEP is highly variable or even uncommon(our patient presented with eye changes).

There is no racial or sexual predominance. Patient is

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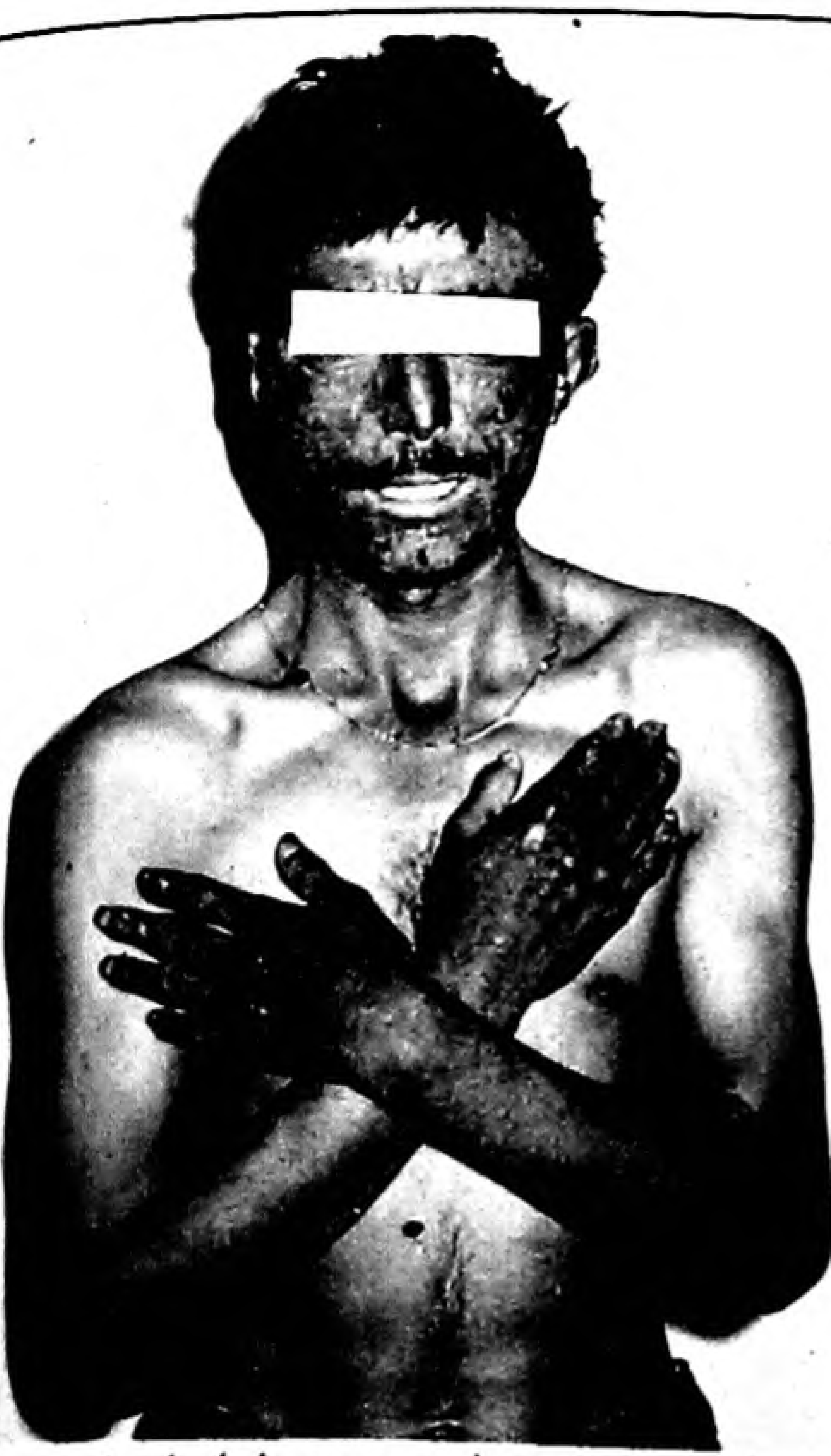

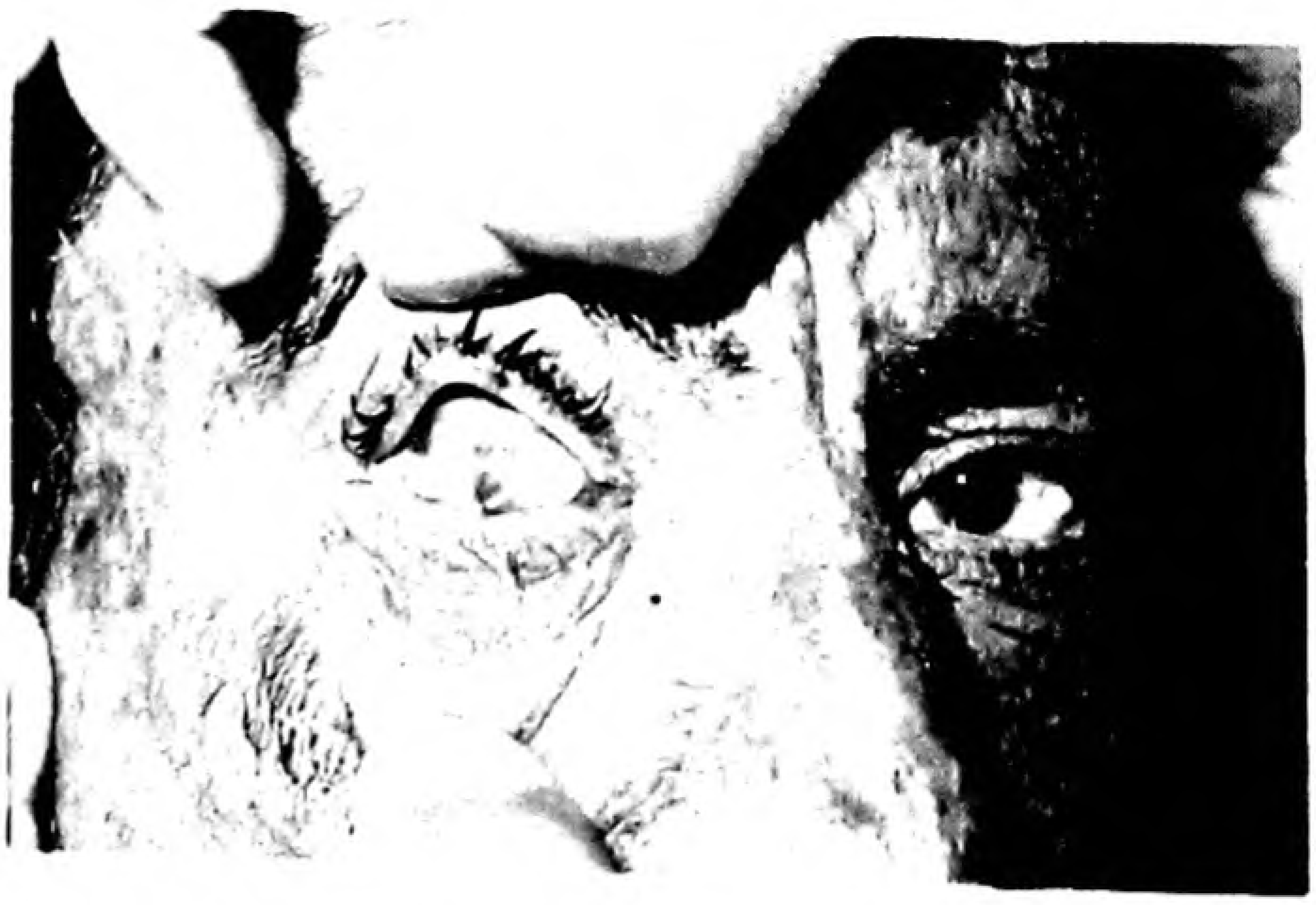

present with pink, dark brown or burgandy red staining of diapers, port wine urine, cutaneous photosensitivity viz Subepidermal bullous lesions, hyperpigmentation-rarely hypopigmented. There is also found crusting, second degree infections, epidermal atrophy, pseudoscleroderma, resorption of distal phalanges, facial mutilation (dracula like) especially of nasal and auricular cartilage, alopecia, hypertrichosis (adaptive), erythrodontia, splenomegaly, signs and symptoms of hemolytic anemia, porphyrin rich gall stones, liver may be enlarged, cirrhosis has been reported, pathologic fracture (due to compensatory expansion of marrow), shortness of stature (due to compensatory marrow), vertebral compression (due to compensatioy expansion of marrow).

BIOCHEMISTRY :

Biochemical findings include: –

Erythrocytes: uroporphyrin (increased), coproporphyrin (increased) Urine: uroporphyrin I &III I>>> III, coproporphyrin I &III I >>> III, porphobilinogen : normal.

Stool : coporphyrin I &III I>>>III, measurement of uro synthase activity on cultured fibroblasts (available as research procedure only)[3].

TREATMENT :

Treatment involves – avoidance of sunlight, trauma to skin, infections, topical sun screens, use of special light bulbs and protective clothing[4], oral beta – carotene[5], transfusion with packed erythrocytes – transiently decrease haemolysis and its attendant drive to increase erythropioesis, splenectomy - short term decrease in hemolysis; skin manifestations – long term improvement probably not achieved, charcoal[6] promising new treatment

Nine months treatment lowers porphyrin levels in plasma and skin. It has resulted in a complete clinical remission during treatment of a man with CEP

Our patient illustrates a typical case of Gunther's disease with mild to severe cutaneous photosensivity with disfiguring of face and hands. He however, came to attention because of occular involvement which is a rare presentation.

The case exemplifies that CEP has a striking and dramatic (count dracula) clinical presentations (HEP is clinically indistinguishable), which if recognised by the alert physician may avert painstaking investigation and initiation of early interventions. Porphrias are actually ecogenic disorders in which environmental, physiological and genetic factors interact to cause disease

We wind up by quoting Hurst. Each organ has its own foreign language. A physician must look and listen in order to detect the signals, for example, the language of RV is in the JVP, the language of the kidney is in the urine and blood and of the liver is in the blood chemistry. The physician must learn the language of organs and translate them into a symptom, an abnormal physical finding, or a pathophysiologic ability which in turn must be translated into a disease process

CEP well illustrates this trust in organ language. It links us to the beginning of medicine and places us in the long line of physicians who have endeavored relentlessly in their search for knowledge. It's our turn now. So let us prop up the sagging limbs of the tree of hippocrites and curettage the decay on its trunk. The future is our not merely to hold, but to mould, endure and enjoy.

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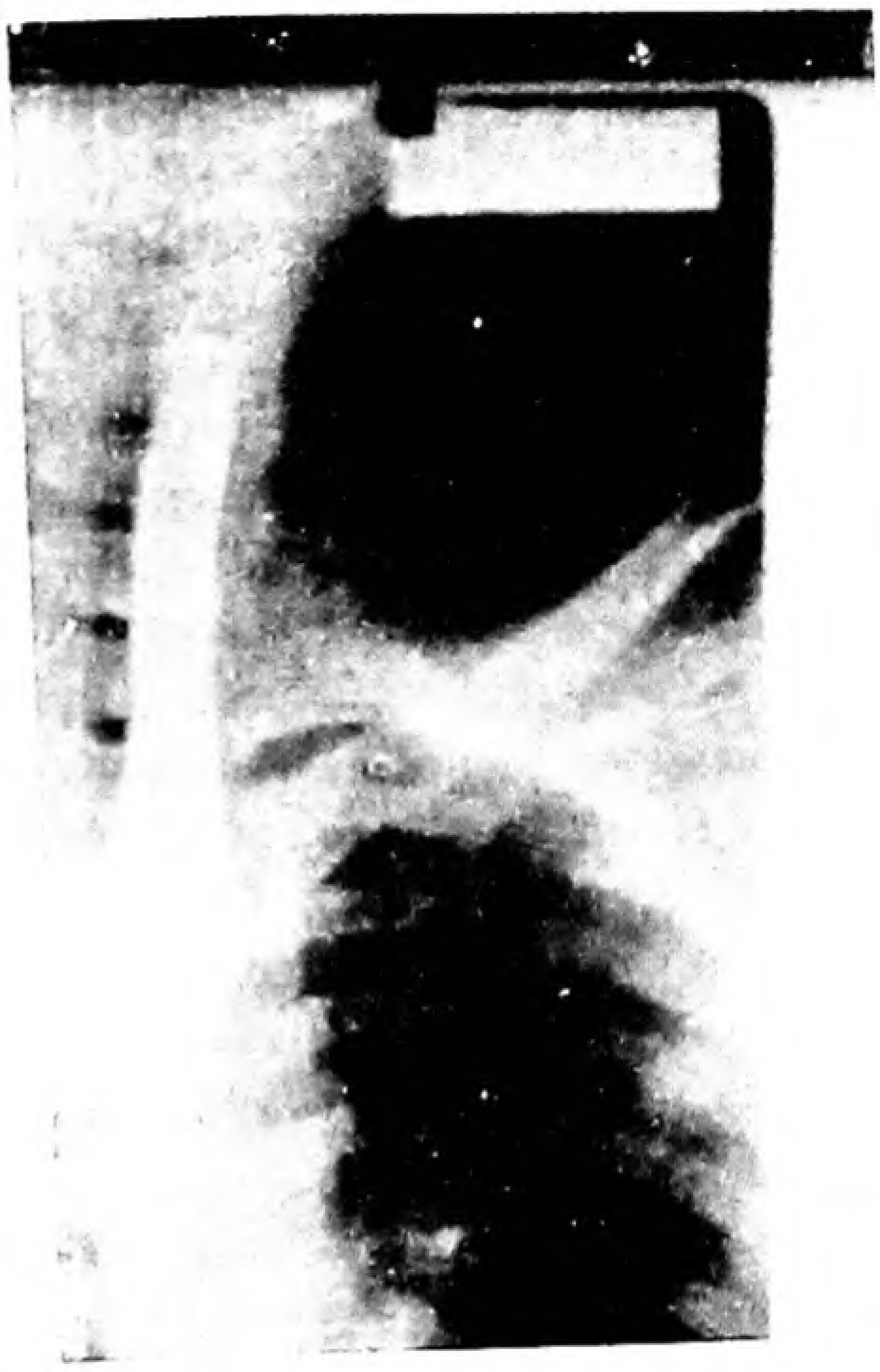
METALIC WRIST WATCH IN OESOPHAGUS

A rare case of Metallic wristwatch with metallic straps impacted in Oesophagus and difficulty of its removal is described. Different kinds of foreign bodies in the oesophagus have been described. Foreigh bodies have commonly been found in children and mentally unbalanced person.

BMO 27 years male, well built and apparently healthy was referred from King Abdul Aziz Hospital Makkah on 3-3-1420 H (17-6-1999). The patient tried to commit suicide in order to avoid execution in public. At 5 a.m. on 17-6-1999, he swallowed his wristwatch with metallic straps (model QQ). After a few hours of swallowing the watch, he started to have pain in the chest, dysphagia and vomiting. X-ray chest done in the prison hospital revealed a metallic wristwatch in the oesophagus. Patient was shifted to King Abdul Aziz hospital Makkah endoscopic Center but the foreign body could not removed. At 4 p.m., same day patient was brought to Al Noor Specialist Hospital and admitted in ENT department. Two hours after admission, after completing the necessary investigations, the patient was shifted to operating theatre. Under general anesthesia upper GI endoscopy was done. The upper end of the metallic strap was found below the cricopharngeal sphincter with marked oedema. With firm grip of foreign body grasping forceps the wrist watch was pulled up slowly and gentally. After removal of foreign body, the oesophagus was re-examined for any possible complication. Postoperative x-ray chest AP & lateral were normal. Six hours after the removal of foreign body the patient started swallowing normally. Patient remained in the hospital for 12 hours and was taken to prison again.

Foreign bodies in oesophagus are not uncommon. An infinite variety of foreign bodies may be swallowed. The maximum incidences of swallowing foreign bodies occur between the ages of 1-3 years. The most common cause of death, in the home, in children under the age 15 years per year in USA is due to asphyxia following aspiration of ingestion of large foreign bodies. The peak incidence of swallowing foreign body in early childhood is of course related to the fact that the children have a habit of putting objects in the mouth to determine their texture, taste, and to



chew in teething. It is extremely important therefore to keep objects which could be swallowed out of reach of small children. The usual symptoms of foreign body in oesophagus are:-

Pain, dysphagia, increased salvation, drooling of saliva, regurgitation, stridor if the foreing body is large and sometimes no symptoms. A metallic wristwatch with metallic straps (model QQ) impacted in the oesophagus is extremely unusual. Its removal may at times be difficult and the patient should be managed at the proper Centre where adequate facilities are available.

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NEWER METHODS FOR THE LABORATORY DIAGNOSIS OF TUBERCULOSIS

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Tuberculosis still stands as the most important infectious disease in humans inspite of the advances in treatment. According to the World Health Organisation, 8 million new cases and 3 million deaths occur each year due to the disease[1], with estimates that it would be responsible for claming 30 million lives world wide in the next ten years[2]. Resurgence of tuberculosis is becoming an important public health problem particularly in the immunocompromised host due to its association with the HIV epidemic[3,4] and emergence of multidrung-resistant stains of mycobacteria. At present the estimated world prevalence is 40 million cases with 10 million new cases annually[5]. The situation is worse in the developing countries where over 95% cases occur accounting for 25% preventable deaths[6]. In India alone 5,00,000 people die of the disease every year accounting for one death due to the disease per minute[7]. All the factors have led the WHO in 1993 to declare tuberculosis a global emergency.[7]

Cure of the disease is possible only with correct diagnosis and appropriate treatment. Early and accurate detection of active cases remains an important objective for improved implementation of chemotherapy and for reduction in the spread of the disease[8]. The diagnosis traditionally depends upon identifying the infective organism in secretions or tissues of diseased individuals. There are, however, several limitations to the traditional techniques used. Staining by the Ziehl-Neelsen technique though useful can detect bacilli only when there are more than 10,000 organisms per ml of sputum[9]. Conventional culture methods are sensitive and can detect 10-100 organisms per sample[10]. However, they are time consuming and take 6 to 8 weeks for the results. Furthermore, viable organisms are needed for culture.

Advances in molecular medicine have provided the research and diagnostic laboratory with tools that are revolutionizing its function. Many new techniques are available today which have improved the diagnosis and shortened the testing time in the laboratory.

Radimeteric Methods:

The most widely used radiometeric method to detect early growth of mycobacteria in culture is the BACTEC system developed by Middlebrook et al[11-13] in 1977. This method employs a C^{14} labelled substrate (palmitic acid) medium that is almost specific for mycobacteria. As the organisms metabolise the substrate, 14Co2 is liberated and detected quantitatively. The amount of carbon dioxide produced is directly proportional to the rate and amount of growth occuring in the medium. This method provides rapid growth, specific identification and drug susceptibility testing within 7 days. Studies have shown that this method has significantly improved rates and times of recovery of mycobacteria from respiratory secretions and other clinical specimens[12,14]. Although this method cannot replace completely the classic mycobacterial cultures, this is a valuable new tool and can be used along with other techniques e.g., genetic probes, high precision liquid chromatography for rapid identification. The disadvantage is the high cost of the equipment which restricts its use to specialised laboratories.

Nucleic acid amplification by polymerase chain reaction:

This is a simple in vitro method based on DNA amplification. This method was invented by Kary Mullis of Citus Corporation in 1987[15]. It detects mycobacterial DNA in clinical specimens as a replacement for culture and shortens diagnostic time to 24 hours. This technique is now wiedely used in the research and diagnostic fields[16-18]. The technique comprises of specific replication of the target DNA (DNA extracted from a clinical specimen) until there is sufficient to detect by standard hybridization techniques. This replication is achieved by using synthetic oligonucleotide primers which are complementary to each strand of the target double-stranded DNA sequences. This process leads to a million-fold amplification of target DNA through multiple cycles of denaturation, annealing and polymerization resulting in an exponential increase in the number of copies of the target. The sensitivity of the test is accepted and confirmed by many authors[17,19,20] but it is not so specific as was thought earlier[19,20]. Dead and living organisms cannct be differentiated therefore, a positive result does not indicate active disease. False positive results are also a major concern due to contaiminated DNA in the specimen which can also be amplified[21]. Its greatest value is in low prevalence populations to detect latent infections.

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Until the specificity of PCR is improved and assessed by prospective trials of patients with well defined clinical problems, it should not be considered as a diagnostic procedure. Till then its advantages of rapidity of obtaining results and simplicity in handling, storage and transfer of samples cannot be exploited in clinical practice[19,20].

Another related newer method is transcription mediated amplification (TMA) which uses species sequence of ribosomal RNA to target for reverse transcriptase[21]. The amplified product is detected by a hybridization protection assay.

Nucleic acid probes have gained increased acceptance for the diagnosis of tuberculosis[22-24]. These probes can be used to identify isolates growting on conventional solid culture media, broth cultures or radiometeric media for the detection of Mycobacterium tuberculosis complex[25]. A detection time of as less as two hours is needed after the sample has been cultured[25]. Nucleic acid hybridization is a powerful rapid, accurate and widely used technique which exploits the ability of complementary sequence is SS DNA or RNA to pair with each other to form a duplex. The probes should be complementary to the amplified sequence. In situ hybridization is used to detect and locate specific DNA or RNA segments in tissues or on chromosomes by making use of radioactive or fluorescent DNA/RNA probes complementary to the required sequence. Rarely detection and identification of M. tuberculosis are achieved by this system. However, in paucibacillary states like tuberculous meningitis and pleural effusion, the number of bacilli is too low to be picked up by this technology[21]. The most commonly used DNA target for amplification is a 36 base pair repeat sequence from the M. tuberculosis genome[26]. Several methods for rapid diagnosis of tuberculosis have been devised through DNA amplification in clinical samples. These include cerebrospinal fluid, gastric aspirate, skin biopsy and synovial fluid. The most suitable material for this technique is lymph node biopsy. Nucleic acid probes form a useful adjunct to BACTEC cultures for confirmation of the diagnosis.

DNA fingerprinting or restriction fragment length polymorphism (RFLP) has been used in investigation of outbreaks of tuberculosis and in epidemiological studies to distinguish between endogenous reinfection and reactivation[27]. The time required for IS6110- based RFLP analysis is 6 to 7 days, IS 6110 (insertion sequence) is a sequence on the mycobacterial genome that allows the insertion of a piece of DNA.

Immunoassary of mycobacterial antigens: Antigens have been detected in liquid mycobacterial cultures only shortly often radiometric growth indics become possible. Both ELISA and radio-immunoassay[28] have been used. These assays are still in the development phase though they offer rapid species- specific identification[29,30]. Monoclonal antibodies may be useful to confer specificity for individual peitopes in these assays. Dot blot immunoassays are capable of recognising species - specific catalyses. Direct antigen detection by immunoassay has been successfully accomplished in cerebrospinal fluid and this may prove to be useful for the diagnosis of tuberculous meningitis[30]. Immunoassay in sputum and other clinical specimens has been found to be difficult and only a few reports are available[6].

Serology by Enzyme-linked Immunosorbent Assay (ELISA):

Serological identification for M. tuberculosis antibody is now an accepted tenchique and is widely used in clinical practice. ELISA for detection of antibodies against M. tuberculosis was introduced by Nassau et al in 1976. It has been shown to be useful for pulmonary and extrapulmomany cases of tuberculosis[32-34]. Antigent 5 is the most well characterized and widely used antigen for ELISA[8]. It has now become apparent that antigen 5 is not as species specific as was orginally believed and contains non-specific and specific epitopes. Other antigens used are Ag 6, SAG, plasma membrane Ag, Anda - TB - C - 7[35,37].

The symptoms of extrapulmonary tuberculosis are non-specific and the detection of tubercle bacilli in body fluids like cerebrospinal fluid, urine and pleural fluid, is often poor. A number of ELISA tests tests have been used especially for extrapulmonary tuberculosis. The various methods used are inhibition ELISA, sandwith ELISA, etc [32,34].

ELISA is an attractive simple and cheap technique and many studies have shown good results with a high sensitivity and specificity especially for antigen detection in CSF[34,38,39]. However, other studies have shown that it is not more specific than other serodiagnostic methods[35]. The sensitivity appears highest when the prevalence is high. A number of kits are now available commercially, the tests should be interpreted with caution[35].

High Performance Luquid Chromatography (HPLC) is a valuable tool to detect species specific mycolic acids produced by mycobacteria which contain these unique fatty acids[40-42]. each species has its own unique mycolic acid pattern. This technique is rapid and reproducible and enables species to be identified within 2 to 18 hours. The disadvantage is the expensive equipment and software

Detection of Biological Compounds:

New techniques have bee3n developed to detect specific components produced either by the mycobacteria or by the disased host in response to infection. Adenosine deaminase enzyme(ADA) is a host enqyme produced by activated T cells. This has been shown to increase in active tuberculous meningitis cases. This enzyme can easily be detected by colorimeteric methods. Its level decrease after effective chemotherapy and can therefore be used to monitor the treatment of TBM[6]. Tuberculostatic acid can also be detected in CSF or serum of patients[13,14]. Both these techniques are in their early stage and require further studies for evaluation regarding their specificity and sensitivity.

Early detection and identification of myocobacterium tuberculosis are achieved by the combined use of BACTEC system and DNA probes. HPLC is the other alternative in some laboratories. PCR is still a research tool because of many problems and limitations. Gene probe amplified Mycobacterium tuberculosis direct tests, DNA hybridization, mycobacterium growth indicator tube system and strand displacement amplification system are currently under evaluation[15].

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CLINICAL AUDIT

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For a variety of reasons —professional, public and political-most countries now seek to establish visible systems for managing quality in health care. The motives, the settings and the details may vary, but the general challenges facing the enthusiasts are remarkably common.

'Audit' should include measurement of current practice, and definition of explicit standards and implementing changes which benefit patients, 'clinical' should imply patient-centred and involving more than one clinical profession (the experience of the patient is the unifying factor).

Purpose

Decide why you want audit. Is it primarily for public accountability, for management control, for contract monitoring, or for professional self-development? Many clinicians accept audit as an educational activity, led by the profession but reported in general terms to managers. The purpose of unidisciplinary audit has been stated as:

- To improve the quality of patient care
- To further professional education and training
- To promote the effective use of resources.

Multidisciplinary audit concerns not only the clincial practice within individual professions but also demonstrates the contributions made by each and the organizational links between them. Audit in many units thus reflects the clinical directorate and health care team structure and includes a further objective, 'to define and monitor standards for the provision and organisation of clincial services.' Moving to multidisciplinary clincial audit thus also implies a greater involvement of managers, both providers and pruchasers.

Limitations

Fix the boundaries of audit. It relates to but is not the same as several other activities which have different aims, accountability or funding. In particular, audit should not be confused with the following:

Research

This aims to identify general truths about health, disease and the technology for intervention (what is the best practice?); audit is about ensuring compliance with best practice and a culture of constant evaluation and improvement of patient care (do you apply the best practice?)

Resource Management

Good clinical practice is usually also efficient but controlling resources is not the prime goal of audit. Even so, resource management and audit share not only methods and potentially fruitful topics, but also the need for accurate, complete and timely clinical data.

Contract Monitoring

Clinicians should be involved in setting and committed to fulfilling quality clauses in service contracts, but data generated by audit should not be assumed to be appropriate for monitoring them, nor should audit staff be diverted to collecting data solely for contract monitoring. Clinicians and managers must agree on the responsibilities for collecting, interpreting and exchanging clinical data for different purposes.

Organization

Peer Group

For the purpose of audit, the appropriate 'peer group' depends on what is the topic under review. Clinical audit is a method of formally questioning the interacting areas of concern amongst different professions and parts of the service. Its strength is that it takes the perspective of the recipient of the service and identifies the coordination of care. Staff should be reassured that clinical audit does not signal the end of unidisciplinary audit. Exclusive meetings by single professions or levels of seniority remain appropriate for certain issues. To permit this flexibility, disciplines and specialities need to share regular meeting times and to set a programme of topics, may be six months or more in advance.

Structure

Define the local leaders and pathways. Plan for evolution at a pace which is sensitive to the willingness of individual specialities, disciplines and units. Identify contact clinicians in each and define how they relate to the committee structure, to 'quality assurance' and to management.

Many units set a meeting once a month for medical audit, and some have extended this to all clinical staff to enable

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their participation and to minimize disruption to services. This requires a clear management commitment not only to audit in nursing, medical and the principal therapy professions (clinical psychology, physiotherapy, occupational and speech therapy), but also in those such as dietetics, pharmacy and orthoptics.

Policies

Take stock of existing local agreements, for example, on confidentiality, data validation, attendance records, reporting and sharing of information. Are they acceptable or adaptable to all?

Approaches

Principles

Define the starting point. Are disciplines and team members starting from the same point, for example, sharing a level of understanding and definitions of terminology and willing to acknowledge alternative viewpoints on quality, to discuss professional overlaps, to recognize differing models of patients care and and to acknowledge each other's skills?

Topic selection

Define priorities for audit. Define the basis on which the team might set priorities for selecting audit topics, for example, high volume, risk, cost or wide variation or an area of local concern. The method of selecting topics should incorporate all members of the group and be sensitive to the legitimate interests of managers and the organization as a whole. It should also be able to respond to relevant external initiatives such as 'consumer' demands and national audit projects.

Methods

Identify available sources of advice and provide practical guidance on appropriate methods. Define general characteristics, for example, objective, quantified, standards-based, repeatable. How is effective methodology to be monitored and promoted?

Resources

Fix the amount of time to be devoted to audit. Allow for duration and frequency of formal meetings as well as the time set aside for their preparation and follow-up. In some services, this has been assessed at half a day per month or 5 percent of clincial time.

Identify and develop sources of information for audit. In particular:

a. Are clinical records accessible? Do they include information on what patients are told, outcomes, etc?
b. Are statistics on case mix, complications, procedures and treatments accurate, up-to-date and readily available to clinicians for audit?
c. Are facilities available to all clinical staff to access literature on clinical practice, and on audit, for example, journals, newsletters, and annual reports?

Catalogue the uni-or multidisciplinary networks for sharing methods, results and training at regional and national level. Are clinicians aware of these and have access to them?

Identify staff available to support clinical audit. Clarify their function, accountability and funding. Who determines the allocation to audit support time, and on what criteria? Are the support staff sufficient in numbers and skill mix to service the audit needs of all clinical groups? Do information staff give time to audit? Is there clerical and technical help?

Define responsibility and funding for training. This should include audit staff, clinicians and managers. Recognize the need for behavioural as well as technical skills. What facilities are available locally, regionally or nationally?

Identify the source and application of existing funds. How is money provided for clinical audit, for example, nursing and professions allied to medicine, hospital medical and dental, primary health care, project grants, and any local top-up from general allocations.

Methods of Clinical Audit

Audit should involve the objective peer review of patterns of care, be sensitive to the expectations of patients and other clinical disciplines and be based on scientific evidence of good medical practice. To this end, cases for review can be selected randomly or by pre-agreed criteria. Patterns of practice, quantified where possible, can be compared with explicit guidelines and these guidelines, though agreed locally, should be consistent with regional and national advice and with the body of scientific knowledge.

No single approach is universally applicable. Indeed, by using a variety of methods, an audit group is more likely to maintain flexibility, innovation and interest. Some methods screen 100 per cent of cases for pre-defined events, which are then subjected individually to peer review. Others—the majority—focus on a limited sample of cases with a common characteristic (such as a symptom, investigation, treatment, or complication).

Adverse patient Events

Adverse patient events or 'occurrence' screening involves the systematic identification and analysis of events during a patient's treatment which may indicate some lapse in the quality of care. Screening criteria, aimed at recognizing a particular occurrence, are defined by the participating clinicians, but may be applied to individual clinical records by non-medical assistants. For each criterion there is a detailed definition of the occurrences it is intended to identify, together with notes of known exceptions, guidelines on use, examples, and details of the information required about each occurence. Findings are analysed by the peer group to determine causes and effects. This information may be used to plan changes in patient management.

It can be applied across the hospital, or within a speciality and is amenable to computer scanning if a comprehensive database is available. It may be used for concurrent or retrospective screening of individual cases, or as a means of identifying trends of suboptimal care. This technique is a valuable tool in risk management. But it is labour intensive on a continuous basis and its concentration on failures rather than successes is not appealing to clinicians as a comprehensive audit system.

Generic (whole hospital) criteria include the following:

- Admission because of adverse results or complications of out-patient management.
- Readmission for complicatiuons or incomplete management of problems on a previous admission.
- Unplanned removal, injury or repair of organ or structure during surgery/invasive procedure.
- Unplanned return to theatre.
- Pathology/histology report varies significantly from preoperative/antemortem diagnosis.
- Cardiac or respiratory arrest.
- Cardiovascular accidents or acute myocardial infarction within 48 hours of surgical procedure, or pulmonary embolus at any time postoperatively.
- Unexpected transfer to higher dependency unit.
- Neurological deficit on discharge not present on admission.
- Unexpected death.
- Evidence of patient/family dissatisfaction.

Traditional morbidity and mortality meetings are mechanisms for reviewing highly selected adverse events locally, confidential enquiries into maternal, perinatal, and perioperative deaths, eclampsia and suicides while under treatment are the equivalent at national level.

Clinicals Indicators

A more comprehensive approach involves the monitoring of routinely generated data within a speicality, in order to identify exceptions or trends which may merit detailed adhoc review. Ideally, each indicator would reflect an agreed policy objective, be routinely and accurately captured and be readily accessible.

Routine presentation of such data to clinicians, though initially painful, does improve quality and usage. A general model might include measures, with relevant comparisons over time or place, of

a. Workload: numerical description of cases, for example, by type, source, site, age.
b. Access: measures of availability, for example, treatment rates, waiting times, non-attendance rates, elective admissions deferred by hospital.
c. Appropriateness: for example, operations out of hours, readmissions, children in adult wards, patients admitted after day case procedure.
d. Outcome: patients discharged home, in-patient deaths, complications.
e. Information: measures of quality (may be by sample study), for example, cases with final diagnosis coded within 1 week of discharge, records missing at time of clinical visit/admission, concordance of parallel data systems.
f. Efficiency: clinic/theatre sessions cancelled, length of stay (selected diagnoses/procedures), new/old patient ratio, pharmac cost per ward/clinic, investigations requested, day cases as percentage of all planned procedures.

Most of these are available from existing data but need to be collected and refined.

Topic Review

Analysis of an agreed topic may be carried out by prospective study or by retrospective analysis of patient records. The latter often reveals inadequacies in recording but is a valuable exercise in providing a baseline for comparison in a later, prospective study. Both approaches involve a systematic review of a large enough sample of similar cases in order to identify, quantify and compare local patterns of practice.

The concept is applicable to surgical and non-surgical specialities, is objective, yields quantitative data and is repeatable but is very labour intensive. For this reason, the clinicians may define explicit criteria by which an assistant can extract key information from large numbers of medical records. The steps in this 'criterion-based' audit are represented in Table 80.1.

Table 80.1: Criterion-based Audit

Steps	Clinicians	Audit Assistant
1	Define topic.	
2	Define criteria for analysis.	
3	Define sample size, dates, etc.	
4		Identify cases for analysis.
5		Find individual medical records
6		Abstract data against criteria.
7		Tabulate aggregated data.
8	Discuss findings and exceptions.	
9	Define action and future policy.	
10	Repeat audit against criteria.	

The topic should be of general interest and of high volume, risk of cost. Or it should be a subject of wide local variation or other concern. It may be a symptom, diagnosis, investigation, treatment, outcome or just a clinical problem. The simpler and more common the topic, the easier it is to collect data and repeat the audit before junior staff initially involved in the work move on.

Discussion on the criteria and sample details should involve the audit assistant to minimize later problems of interpretation. Typically, the criteria should form abou a dozen self-explanatory questions, with a numerical or a yes/no answer which can be gleaned from the record.

The purpose of these criteria is not to act as a protocol for clinical management but to establish current patterns and to help identify records which may merit individual review. Local groups may develop different ideas and these may represent the lowest common denominator on which agreement is achievable. For a particular inpatient diagnosis, these may be under headings such as:

- Referral: for example, delay before seen by junior/consultant.
- History: for example, specified symptom(s) recorded.
- Examination: for example, specified sign(s) recorded.
- Investigation: for example, specified test(s) reported.
- Treatment: for example, specified drugs (type, dosage, route(given.
- Follow-up: for example, discharged asymptomatic within agreed time from ward/from clinic.
- Communication: for example, summary to General Practitioner within 'n' days.

It is wise at this stage to test the criteria on a very small sample of records, say five, to check that there is a realistic chance of finding the required information.

The assistant then has the often challenging task of finding an accurate, up to date, listing of patients who had the specified diagnosis and were treated by the doctors concerned within the defined time scale. The next task is to find the records themselves, and not to bias the sample by giving up on the ones that are missing.

Abstracting of the records, once found, can take 10-30 minutes per case, depending on the number and complexity of the criteria. Multiplied by, say, twenty cases for each of three or four firms involved, this occupies many hours of work.

The results have to be tabulated and presented (ideally with the help of a computer spreadsheet and graphics package) to the clinicians. They must satisfy themselves that the findings are accurate.

Discussion tends to turn to the choice of criteria to the interpretation of results and to agreement on action.

The audit can be repeated, using the same or modified criteria after an agreed time in order to measure the impact of the changes on patient care.

Medical Records

Clinical guidelines for minimum standards of records have been issued by the Royal College of Surgeons, England. Checklists for evaluating records were included in the first audit report of the Royal College of Physicians, England.

Auditing the records of every patient who had general anaesthesia should be done on the basis of the criteria shown in the box.

Percentage meet

Records correctly field
Anaesthetic record present.
Patient name on sheet
Pre-operative assessment recorded
Operation date recorded
Operation type recorded
Anaesthetic technique specified
Blood pressure recorded
Oximeter reading recorded
Name of anaesthetist legible on record

Therapeutics

Prescribing

Audit of drug usage is valuable both clinically and economically, and data (on choice, route, dose, and duration) are generally well recorded. Such audit also highlights some of the problems of implementing and maintaining change in clinical practice.

Some studies of medications focus on choice of drug, for example, thrombolytics; appropriateness; route of administration; and serum monitoring.

Other forms of therapy also lend themselves to audit and these often involve other clinical specialities and disciplines. Non-surgical uses in the hospital could also be reviewed. Although primarily relevant to dermatology, the use of PUVA treatment illustrates a general model for the discussion of appropriateness which might precede audit of any therapy, in terms of criteria for entry, process and exit.

Entry

On what criteria ae patients selected/refused?

- diagnosis?
- disability (physical/social)?
- extent of disease?
- age of patient?
- failure of first line therapy?
- ability to attend for regular treatments?

Process

How should treatment be conducted?

- what machine capacity / power is appropriate?
- what staff supervise therapy?
- safety/calibration procedures?

- number of exposures/frequency?

Exit

When should treatment cease?

- percentage improvement?
- failure to respond?
- side effects?

The calibration and safety of equipment used by doctors is central to the overall quality of medical care

Diagnostic Investigations

Radiology

Audit of the use of diagnostic radiology is indicated by evidence of clinically unproductive 'routines' in many sepecialities, by potential savings in inconvenience to patients staff time and hospital costs, and by the growing concern over exposure to medical radiation.

The Joint Working Party of the Royal College of Radiologists, London and the National radiological Protection Board, London estimated that the current population dosage could be halved without detriment to patient care. The remaining half would still be three times greater than the total of all other man-made sources of population radiation. Some of this reduction could come from various means of optimizing dosages per examination, but the greater contribution would be in avoiding unnecessary X-rays. At least 20 per cent of X-ray examinations currently carried out in the UK are clinically unhelpful in the sense that the probability of obtaining information useful for patient management is extremely low.

The Royal College of Radiologists, London recommended a 'temporary norm', based on the lowest rate found, of 12 per cent.

The guidelines may easily be developed into explicit criteria for the audit of current request patterns.

Post-Mortem Examination

Autopsy findings are consistently reported to differ substantially from antemortem diagnoses in 10 to 25 percent of cases-indeed the 'ultimate audit.'

Random Case Review

Cases may be selected randomly or by a predetermined system from among the general workload for critical review by doctors not previously involved in the clinical management. Findings can then be presented to the audit group for discussion. Checklists may be used to ensure that each case is reviewed according to an agreed system of questions.

The method is easy to use, requiring minimal resources and no numerical data. Many groups find it a useful introduction to more structured discussion of clinical management. But it requires considerable time from the reviewers prior to the meeting. Major issues may be missed through the randomness of selection. Discussion tends to be subjective and criticism often centres on the inadequacy of the record and thus the junior staff.

In many hospitals, one or two audit meetings a year are given to random reviews as a change from more focussed analysis of single issues.

Patient Satisfaction

The assessment of the views of patients and their relatives must be incorporated into the judgments which doctors apply to their work. Formal surveys of patients' iews are gneerally included in the overall quality improvement programmes of hospitals, rather than in medical audit. But audit may scrutinize evidence of thorough history-taking treatment plans agreed with patients, informaiton given, perceived value of treatment and outcome measurements expressed in the patients' own terms.

The honest views of patients and doctors on the objectives of medical intervention do not always tally. For example, cancer patients may choose less interventional therapy in preference to higher chance of 5-year survival.

Complaints leading to litigation are increasing and analysis of the causes can provide guidance for avoiding similar events in the future. Failure to communicate, explain or apologize can add substantially to even a relatively minor mishap and become a prime reason why patients or relaltives pursue legal redress. Clinical and administrative lessons can also be gleaned fromthe experience of the denfence organizations, and provide material for audit.

Comparative Audit

The confidential pooling of aggregated data, using standard definitions and formats, allows individual doctors to receive feedback on their own performance compared with others working in the same field. This can be simplified with standardized data systems, but the method of production of the statistics is less important than their accuracy. The most reliable data are those collected by individual clinicians. Many examples of the use of comparative data are found in surgery but the principle has been applied within health regions to obstetrics and medical specialities.

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HOSPITAL WASTE — A MAJOR PROBLEM

Mukesh Yadav MD.

1. INTRODUCTION

The World Health Organisation Regional office for Europe convened a meeting of concerned personal at Bergen, Norway in 1983, which was the first time when this issue was discussed. The seriousness of improper Bio-Medical Waste management was brought to the limelight during the "beach wash-ups" during summer 1998; which was investigated by the Environment Protection Agency (EPA) of USA, and it culminated in the passing of Medical Waste Tracking Act (MWTA) Nov. 1988. This made USA the pioneer as far as waste management is concerned[1].

The issue of indiscriminate Bio-Medical Waste management in India has attracted the attention of the highest judicial body at the level of Hon'ble Supreme Court of India and Apex Court has, from time to time issued instructions regarding management of Bio-Medical Waste[2].

In this background in persuasion to the directive of the Court, the Ministry of Environment and Forests, Government of India notified the Bio-Medical Waste (Management and Handling) Rules on 27th July 1998; under the provision of Environment Protection Act 1986. Accordingly all the hospitals in the public and private sector are now bound to follow these rules to evade legal actions[3].

2. MAGNITUDE OF THE PROBLEM

2.1. Globally

The quantity of Bio-Medical Waste generated will vary depending on the hospital polices and practices and the type of care being provided. The data available from developed countries indicate a range from 1-5 Kg/bed/day, with substantial inter country and inter speciality differences[4]. Meagre data from developing countries indicates that the range is essentially similar but the figures are lower i.e. 1-2 Kg/day/patient[5].

According to a WHO report, around 85% of the hospital wastes are actually non hazardous, 10% are infective (hence, hazardous), and the remaining 5% are non-infectious but hazardous (chemical, pharmaceutical and radioactive)[6].

2.2. In India

There are no national level studies on quantity of hospital waste generated per bed per day; but studies have been carried out at local or regional levels in various hospitals. Whatever data are available from these studies, it can safely be presumed that in most hospitals roughly about 1-2 Kg/bed/day of waste is generated. Some of the notable studies are shown in the table No 3.

One study claims, the estimated quantity of the waste generated in the hospitals varies from 2-5 kgs/bed/day with a total Bio-Medical Waste generated 11-14 tons/day in the city of Srinagar alone (with 13 hospitals, 13 nursing homes, 31 dispensaries and 88 health centres and polyclinics). (The Himalyan Mail Oct. 30, 2000: 1.)

3. Health Hazards from Indiscriminate Management of Bio-Medical Waste

There are many examples and ample evidences that indiscriminate management of Bio-Medical Waste could cause serious hazards to health and environment as follows-

3.1. There are many harmful agents in the Bio-medical waste. The most important are Biological agents, which pollute water and food and cause alimentary infections like cholera, typhoid, dysentery, infective hepatitis, polio, ascariasis and hook worm diseases etc.

3.2. Wastes breed vermin and pests. Examples are:
   a. Mosquitoes that transmit insect borne diseases like malaria and filaria.
   b. Common house flies which transmit infections mechanically.
   c. Many other insects and worms that cause nuisance e.g. cockroaches, ants.
   d. Rats thriving on refuse.

3.3. Dust may harbour Tubercle Bacilli and other germs, which cause diseases if inhaled.

3.4. Soil polluted by night soil may be rich in Tetanus spores.

3.5. Nosocomiol infections and AIDS, Hepatitis B&C etc.

3.6. *Aesthetic:* -Sullage water, refuse and night soil, all create intolerable nuisance of sight and smell.

4. Pathophysiology

The blood born pathogens have gained significant attention after the attack of HIV and HBV, HCV which can lead to AIDS and Hepatitis B, C etc in addition to other viral and bacterial infections. The Hepatitis B virus (HBV)

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carries the greatest risk of transmission as about 25% of HBV- infected persons develop acute Hepatitis with the possible complications of cirrhosis of liver and liver cancer. The HBV transmission is quite similar to HIV as it only occurs through direct contact between an open wound, non-intact skin or mucous membrane, contaminated blood and body fluids, sexual contact, transplacental route. The needle prick injuries and broken injection foils may cause the transmission of HBV. Similarly HIV is the most critical infection with no cure.

The out break of TB among hospital employees and other nosocomial infections among patients are largely attributed to the low index of suspicion for TB and delayed diagnosis. The outbreak of cholera and other water born diseases are also attributed to indiscriminate management of Bio-Medical Waste.

5. Who are at more risk?

The doctors, nurses, technicians, washermans, sweepers, hospital visitors, patients, rag pickers and their relatives are exposed routinely to Bio-Medical Waste and are at more risk from the many fatal infections due to indiscriminate management.

6. Why Bio-Medical Waste needs Management?

It is needed due to health, Environmental, legal and aesthetic reasons in addition to Ethical reasons.

Ethical aspect

The ethical aspect related to the social responsibilities, which the health professions have, as a result of their status, knowledge and skills and an obligation to alert those who are at risk. This is reflected by the compulsory notification of infectious and notifiable diseases as a measure of public welfare. As regards Bio-Medical Waste management health professionals, bear a responsibility to act in such a way to prevent exposure to various health hazards and exposures to dioxins[7]. As Bio-Medical Waste are the major source of dioxine production during incineration, which are generally cause of incurable cancers, the Medical ethics dictate that prevention must be carried out as we all are bound by Hippocratic oath.

7. Reasons for indiscriminate management and handling of Bio-Medical Waste

7.1. Lack of Priority in policy on Bio-Medical Waste Management and funds on the issue.

7.2. Lack of Managerial skill and Training of Bio-Medical Waste Management.

7.3. Lack of Appropriate technologies for treatment and disposal of Bio-Medical Waste.

7.4. Lack of Strict implementation of infection control measures like sterilization and disinfectant techniques.

7.5. Lack of Awareness among medical personal, patients, attendants and people at large.

7.6. Lack of Coordination between municipality, Pollution Control Board and hospital authorities.

7.7. Lack of Accountability of persons involved in the management of Bio-Medical Waste.

8. Management of Bio-Medical Waste.

The working group on Hospital Waste Management constituted by WHO in 1983, was unanimously agreed upon that health care establishments should be held legally accountable for their waste management practices, based on the universal principle that the "generator is responsible". As far as possible the "cradle to grave" system of notification should be followed, which implies that all stages of waste disposal are systematically controlled. The need for and nature of the control measures must be an integral part of overall hazardous waste management policy[8].

9. What is Bio-Medical Waste?

The Bio-Medical Waste means any solid, fluid or liquid waste including the containers and any intermediate product, which is generated during the diagnosis treatment or immunisation of human beings or animals[3]. In other words, the rubbish containing human tissues, body fluids, excreta, unused drugs, swabs, disposable syringes and sticky bandages etc. constitutes Bio-Medical Waste.

10. Classification of Bio-Medical Waste (See Table No. 4)

This schedule of classification should be displayed at strategic locations like inside the dressing rooms, nursing stations, OT, pharmaceutical units so that doctors and nurses are made aware, preferably in local language so that patients, and attendants also benefit from it.

11. Who are the generators of the Bio-Medical Waste?

Definition

"Generator" means any person nominated on behalf of a hospital, nursing home, clinic, dispensary, laboratory, animal house, slaughter house, veterinary institutions including those established by or under, the control of Govt. which generates or cause to be generated, handles or cause to be handled any Bio-Medical Waste or where no such person is nominated the person incharge there of.

Thus, all the Hospitals, nursing homes, veterinary hospitals, clinics, dispensaries, diagnostic laboratories, pathological laboratories, blood banks, mortuary and any other health care establishments are the potential generators of Bio-Medical Waste[3].

To ensure a clean and healthy environment we require, segregated collection safe transportation and storage, environmentally sound treatment and disposal of Bio-Medical Waste in eco-friendly manner. There are following stages of Management of Bio-Medical Waste: -

12.Segregation of Bio-Medical Waste

Definition

Segregation means "separation of different types of wastes by sorting or the systematic separation of Bio-Medical Waste into designated categories"[3].

Significance

It is the most important step in the entire process of Bio-Medical Waste management. As it needs special attention to be given to the relatively small quantities of infectious and hazardous waste, there by reducing not only the risks but the cost of handling, treatment and disposal. For example if general waste gets mixed with infectious waste, the whole waste has to be incinerated which may prove to be costly.

Who are responsible for segregation?

It is universally accepted fact that segregation of Bio-Medical Waste is and should be the responsibility of the generator of the waste. The generators of the waste are those persons in any health care establishment who generate or produce wastes, viz. doctors, nurses, paramedical staff, patients, and their attendants. These Medical persons who are educated and trained surprisingly they are least bothered about the amount, quantity and type of waste they generate and the way it is disposed.

It is these persons who question the sanitation staff and pull them up for improper segregation while forgetting that if they themselves practice segregation when ever they are generating waste, is the best policy rather than blaming the sanitation staff who is generally illiterate and is likely to make mistakes.

Why Emphasis on sharps?

During segregation special emphasis should be given to infectious, hazardous and sharp wastes. From amongst all categories of waste, the "sharps" which include syringes, needles, trocar, canula, guide wires, broken glasswares, scalpel. blades etc. have the highest disease transmission potential. Almost 85% of sharp injuries are caused between their usage and subsequent disposal and more than 20% of those handle them encounter "stick" injuries. The emphasis should be on safe handling, rather than on the various treatment and disposal options[1]. However, use of needle cutter or needle malter is of great help.

The staff involved in Bio-Medical Waste handling should be given all personal protection measures such as caps, masks, gum boots, gloves etc. They should also be vaccinated for Tetanus and Hepatitis B and follow up health check up along with record keeping regarding their health status is necessary step.

Solution

Till the doctors do not wake up to this problem, the ground reality will not improve in any way. Thus it can very well be said that "sensitising" the generators of waste to properly segregate the waste at the source of generation is the "Key" to the successful implementation of Bio-Medical Waste (M&H) Rules 1998.

13. Collection of Bio-Medical Waste

Bio-Medical Waste should be segregated at source of generation and collected in prescribed colour-coded bins according to classification as shown in Table No.4.

13.1. Containers

The dustbin should be light with a cover and size enough to be carried by a person.

Inner plastic bag is also used to facilitate the lifting of waste content for transferring.

Coloured bags/dustbins should be placed in different parts of the hospital.

Segregation and collection both can be considered as being complementary to each other.

13.2. Labelling

If containers are transported inside the premises for treatment then it shall be labelled according to schedule III, but if a container is transported outside the premises, where Bio-Medical Waste treatment facility is not present, the containers shall, apart from the label prescribed in schedule III, also carry information prescribed in schedule IV.

Schedule for Providing Waste Treatment Facilities Like Incineration/Autoclave/Microwave etc. (Schedule IV, Rule 5)

Table No. 1

Sl.	CATAGORY	EFECTIVE DATE
1.	Hospital and nursing homes in towns with population of 30 Lakh and above.	By 31st Dec. 1999
2.	Hospital and nursing homes in towns with population below 30 Lakh	
	a. With 500 beds and above	31st Dec. 1999
	b. With 200 beds and above but less than 500	31st Dec. 2000
	c. With 50 beds and above but less than 200.	31st Dec. 2001
	d. With less than 50 beds.	31st Dec. 2001
3.	All other institutions generating biomedical waste but not included in 1. & 2. Above	30th June, 2000

14. Storage of Bio-Medical Waste

Definition

- Storage means " the holding of Bio-Medical Waste for such period of time, at the end of which waste is treated and disposed off"4.

The container in which such wastes are stored shall display promptly International Biohazards symbol label in red colour with details of Bio-Medical Wastes as specified in schedule III. The packaging of all such wastes is done in sturdy leak proof containers confirming to specifications mentioned in schedule II.

Duration

No such waste shall be stored in any place where it is generated beyond a period of 48 hours, provided that if for any reasons it is necessary to store any such wastes beyond a period of 48 hours, the authorised person shall take necessary permission of appropriate authority and shall take such measures so that waste does not decay or putrefy so as to cause hazard to human or animals or environment.

15. Transportation of Bio-Medical Waste

Definition

It means "movement of Bio-Medical Waste from the point of generation or collection to the final disposal"4.

THE FEE STRUCTURE FOR SEEKING AUTHORISATION.
(Providing service or treatment to more than 1000 patients per month)
TABLE NO. 2

Sl.	PARTICULARS	FEE PER ANNUM
1.	Clinics, Pathological laboratories, Blood Banks.	Rs.1000.00
2.	Veterinary institutions, dispensaries and animal houses.	Rs.1000.00
3.	Hospitals, nursing homes and health care establishments.	Rs.1000/- up to 4 beds & additional Rs. 100/- bed/annum from 5th bed onwards
4.	Operator of the facility of Bio-medical Waste (Excluding transportation)	Rs.10000.00
5.	Transporters of Bio-medical waste	Rs. 7500.00

QUANTITY OF WASTE GENERATED AT VARIOUS PLACES IN INDIA
TABLE NO. 3

Sl.	Place of Study	Type of Hospitals	Quantity of Bio -Medical Waste generated in Kg/pt/day	%Composition of Bio-Medical Waste
1.	Kolkota[8] AIIPH	Govt., Private Nursing Homes (Large Hospitals)	1.044 to1.368	20-30% Infectious 50-75% general
2.	New Delhi Vatavaran	Govt. and Pvt. Hospitals	1.5 kg 1.4 to 1.6 Kg.	45% infectious waste
	NIHFW[9]	Govt. Teaching Hospitals		
	AIIMS[10]	Tertiary care (research hospitals)		
3.	Mumbai TMH	Tertiary Care Cancer Hospital	1.13% KG.	46% infectious
4.	Jaipur[11] SMS MC	Large Tertiary Care Hospital Small Hospitals	1.5 Kg. 0.25-0.5% Kg.	
5.	Manipal12 KMC Manipal	Large Tertiary Care Hospital	0.775 Kg.	16.26% infectious
6.	Punjab[13] Amritsar	Large Tertiary Care hospital	1.051-1.30 Kg.	

15.1. Type of Vehicle

No such waste shall be transported on site or off site in any vehicle other than those specially designed and recommended for the purpose. The appropriate authority shall evolve a protocol of safe transportation of such wastes taking into account various local factors, and make available a copy of the same to every authorised person.

15.2. Timing of transportation

It should not clash with peak working hours, visiting hours and meal distribution timing. The timing of transportation of infectious and non-infectious waste should be different.

15.3. Documentation system

There should be proper documentation system in which should be recorded, the type of Bio-Medical Waste, taken by whom, for which type of disposal on a specific date/shift. This is to ensure that all such wastes are actually disposed off, as per guidelines.

Colour Coding and type of container, Treatment and disposal options of bio-Medical Waste (Schedule No. II, Rule No.6) Table No. 4

Sl.	Waste Classification and Category	Types of Container /Colour Coding	Treatment/Disposal options as per Schedule I
1.	Human anatomical waste (human tissues, organs, body parts etc.) Animal Waste (animal tissues, organs, body parts, carcasses, etc. of experimental animals used in research), Microbiology and Biotechnology waste (discarded laboratory cultures, stocks or specimens of microorganisms, live/attenuated vaccines, human/ animal cell culture), and Solid waste (items contained with blood/body fluids, such as dressings, plaster casts, cotton etc.) Cat.1, Cat.2, Cat.3, and Cat.6.	Plastic bag Yellow when Collected, material is to be subjected to either incineration or deep burial	Incineration/Deep Burial
2.	Solid waste (disposable items other than waste sharps, such as tubings, catheters, intravenous sets etc.), Microbiology and Biotechnology waste (as above) and Solid waste (as above). Cat3, Cat.6 and Cat7.	Plastic Bag/disinfected Container Red when the the waste is to be steam sterilised, like autoclave Other processed microwaved/treated chemically	Autoclaving/ Microwaving/ Chemical treatment
3.	Waste sharps (needles, syringes, scalpels, blades, broken glass etc.) and Solid waste (as above). Cat.4 and Cat.7.	Plastic bag/Puncture proof container Blue	Autoclaving/ Microwaving/ Chemical treatment/ destruction and shredding
4.	Discarded medicines and cytotoxic drugs, Incineration ash and Chemical waste	Plastic bag Black	Disposal in secured landfill

(chemicals used in production
of biologicals or as disinfectants etc.)
Cat.5, Cat9, Cat10 (solid)

16. Treatment of Bio-Medical Waste

Definition

Treatment means "any method, technique or process for altering the biological, chemical or physical characteristics of waste to reduce the hazards it presents and facilitate, or reduce the costs of disposals"4.

16.1. Objectives

The basic treatment objectives of Bio-Medical Waste include volume reduction, disinfections, neutralisation or other change of composition to reduce hazards to health and environment. After such treatment the residues can be handled safely, transported, stored and disposed off.

16.2. Site

As prescribed by the competent authority.

16.3. Technology options for Treatment

There are mainly five technology options available for the treatment of Bio-Medical Waste, which are as follows

16.3.1. Chemical treatment

16.3.2. Thermal treatment

a. Autoclaving
b. Hydroclaving
c. Incineration
d. Pyrolysis
e. Plasma and plasma pyrolysis systems
f. Microwave

16.3.3. Mechanical treatment

a. Compaction
b. Pulverisation
c. Grinding and shredding

16.3.4. Irradiation

16.3.5. Biological method

17. Disposal of Bio-Medical Waste

Definition

It means "burial, deposit, discharge, dumping, or release of any Bio-Medical Waste into or on any air, land, or water"4. After treatment of the Bio-Medical Waste, it becomes non infectious or non hazardous and depending upon the quantity of the solid waste generated the following disposal options are available

17.1. Site

As prescribed by competent authority.

17.2. Disposal of solid waste

a. Land fill
b. Use of pills
c. Composting
d. Biogas

17.3. Disposal of liquid waste

a. Discharge into sewers
b. Soakage pits
c. Waste stabilising pond

18. DUTIES OF BIO-MEDICAL WASTE MANAGEMENT FACILITY OPERATOR

Definition

Operator of a Bio-Medical Waste facility means an "authorized person or an institution owing or providing the Bio-Medical Waste facility".

18.1. Authorisation

If you are a generator of Bio-Medical Waste and treating more than one thousand patients per month then it is mandatory to register with State Pollution Control Board/Committee before specified date as shown in table No.1. You are required to submit the following with the appropriate application form.

Duly filled application form with prescribed fee (see table No.2) Payable for three years.

Affidavit regarding proof of beds.

Copy of the agreement if any with operator of a facility/transporters of Bio-Medical Waste.

The occupier (owner) of a Bio-Medical Waste management facility shall be responsible for proper collection, reception, treatment, storage and disposal of Bio-Medical Waste due to following reasons: -

18.2. Legal Obligation

a. To manage Bio-Medical Waste according to the standard prescribed failing which legal action can be initiated.
b. To prevent health hazards associated with indiscriminate Bio-Medical Waste Management
c. To prevent environmental hazards especially due to inadequate treatment and faulty disposal methods.
d. To provide necessary information to the concerned person, make arrangements of training for creating awareness.

18.3. Maintenance of Records.

a. Every authorised person shall maintain record related to the generation, segregation, collection, storage, transportation, treatment, disposal and/ or any form of handling of Bio-Medical Waste in accordance with these rules and guidelines issued in appropriate Form V.

b. All records shall be subject to inspection and verification by the prescribed authority at any time.

18.4. Submission of Annual Report

Every Occupier/operator shall submit an annual report to the prescribed authority, in prescribed Form I by 31st January every year, to include information about the categories and quantities of Bio-Medical Waste handled during the preceding year. The prescribed authority (SPCB) shall send this information in a compiled form to the Central Pollution Control Board by 31st March every Year.

18.5. Accident reporting

When any accident occurs during handling at any site where Bio-Medical Waste is handled or during transportation of such waste, the authorised person shall report the accident in Form VI to the prescribed authority forthwith.

19. Legal implications

19.1 Violations of Rules

As per law, it is mandatory for all types of medical services provider to ensure proper implementation of Bio-Medical Waste (M&H) Rules 1998.Installation of incinerator is mandatory for hospitals with more than 50 beds.

It may be kept in mind that any person can report any alleged negligence in Management and Handling of Bio-Medical Waste to the appropriate authority. The state Pollution Control Board/committees have been asked to take action against the defaulting hospitals or nursing homes under section 15(1) of the Environment (Protection) Act, 1996 which reads as " Whoever fails to comply with or contravenes any of this act, or the rules made or orders or directions issued hereunder, shall, in respect of each such failure or contravention, be punishable with imprisonment for a term which may extend to five years or with fine which may extend to one lakh rupees, or with both, and in case of failure or contravention continues, with additional fine which may extend to five thousand rupees for every day during which such failure or contravention continues after the conviction for the first such failure or contravention."

Statutory warning to all hospitals for installation of Bio-Medical Waste treatment and disposal systems is already issued according to schedule given in table No.1, by appropriate authority.

19.2. Appeal against punishment

Any person aggrieved by an order made by the prescribed authority under these rules may within thirty days from the date from which the order is communicated to him, prefer an appeal to such authority as the government of state/ Union Territory may think fit to constitute; Provided that the authority may entertain the appeal after the expiry of the said period of thirty days if it is satisfied that the appellant was prevented by sufficient cause from filing the appeal in time. The appropriate authority shall dispose of such appeal within a period of six months from the date of its receipt.

20. Conclusion

20.1. We must understand the gravity of the issue and difference between hospital waste and general waste.

20.2. We must ensure proper segregation at the source of generation, collection in prescribed coloured containers, safe transportation, appropriate treatment and environmentally sound disposal of Bio-Medical Waste.

20.3. Health education of everyone involved in the management and handling of Bio-Medical Waste.

20.4. Motivation and sensitisation of waste generators and health care providers to make environment safe for living and to protect them from legal actions for violation of Bio-Medical Waste (M&H) Rules 1998.

20.5. Make use of common facility treatment for economic reasons and keep Bio-Medical Waste management in priority list of policy making, starting from the very beginning.

20.6. Last but not the least is effective implementation of rules by surprise visits and inspection by appropriate authorities and fixing the accountability of each and every person involved in management of Bio-Medical Waste.

Bio-Medical Waste Management programme cannot successfully be implemented without the willingness, devotion, self-motivation, cooperation and participation of all sections of employees of any health care establishment. If we want to protect our environment and health of community we must senitise our selves to this important issue not only in the interest of health managers but also in the interest of community.

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Further Reading:

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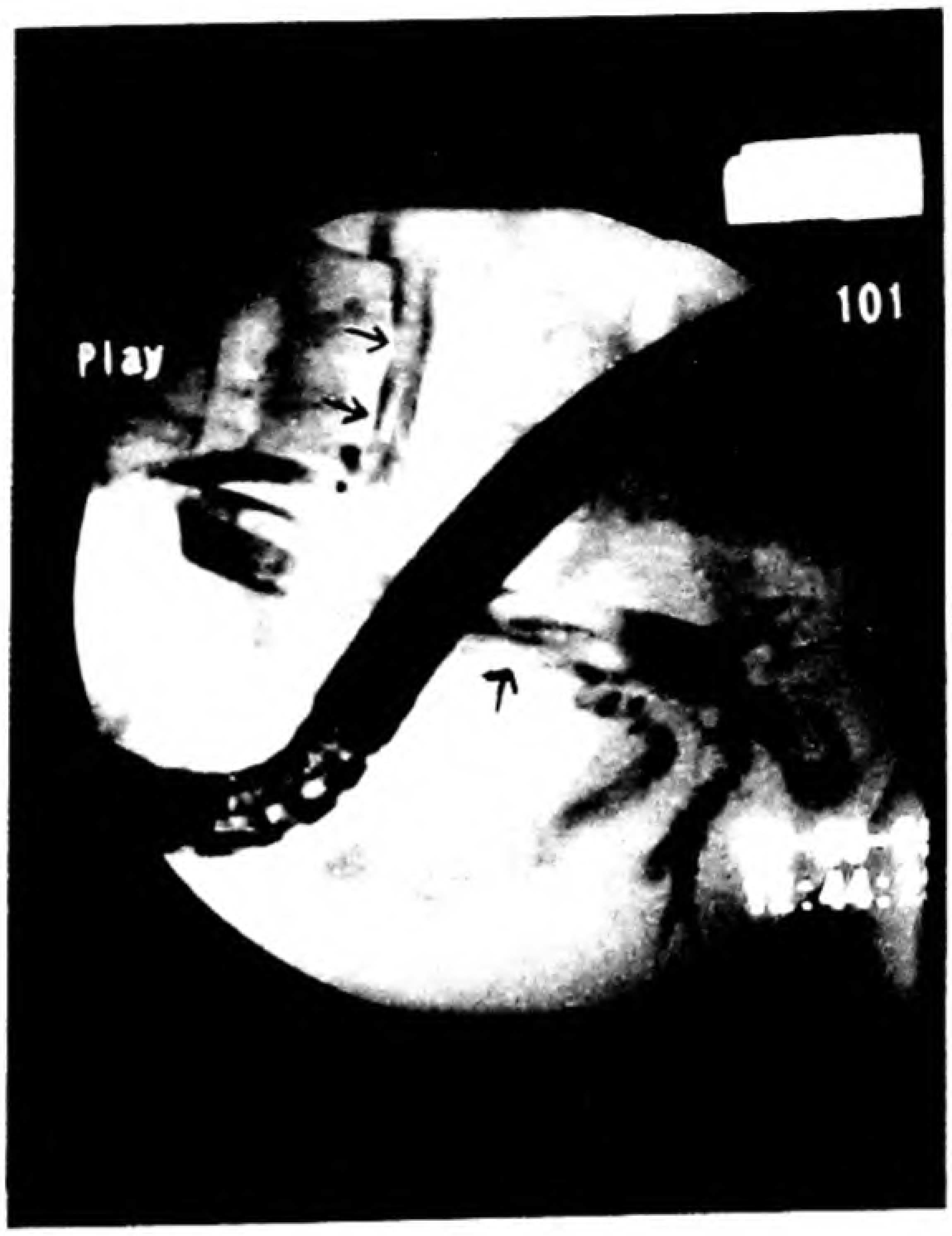
BILIARY AND PANCREATIC DUCT ASCARIASIS



A 17 year old female presented with (three) 3 days history of severe pain epigastrium and yellow discoloration of eyes. She also had fever of 101°F. Examination revealed ictereus and tenderness in epigastrium. Her ultrasound abdomen revealed dilated common bile duct (CBD) -1.5cm and containing multiple linear echogenic structures (ES) without accoustic shadows (AS) - multiple worms. Left intrahepatic duct (LIHD) was also dilated and contained linear ES without AS- worm. Patient was subjected to ERCP which showed multiple worms in common bile duct (CBD) and a single worm in pancreatic duct (P.D.). All the worms were extracted. Patient was given antihelminthics and discharged from hospital.

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JK-Practitioner 2001; 8(4): 283

AWARDED

Dr Joginder Singh, Ex-Chief Medical Officer, Doda and retired Deputy Director Health Services J&K Govt. was a distinguish member of J&K Health Services. He was able administrator, having sense of devation to duty of highest order, by saving so many precious lives of many injured, by plunging his own life at risk, during telling circumstances. He has been twice honoured by Government. His excellency the Governor of J&K, awarded him with Gold Medal and cash award of Rs. 25000/- in special function held at Raj Bhawan on 5th September 2001.

He was also awarded a Gold Medal and Cash Award of Rs. 25000/- on the Republic Day 1998 for his bravery and devotion to duty. Dr. Joginder had risked his own life to save injured persons at Bhaderwah on 18-08-1992.

He is at present working in Department of Community Medicine in Acharya Shri Chander College of Medical Sciences and Hospital, Sidhra, Jammu as Assistant Professor.

CONFERENCE CALENDAR

1. Ninth Asian Conference on Diarrhoeal Diseases and Nutrition, New Delhi, India 28-30 September 2001
Information: Dr. M. K. Bhan, Conference Secretary, ASCODD2001. Room No. 3054. Academic Block, Department of Paediatrics, All India Institute of Medical Sciences, Ansari Nagar, New Delhi 110029.
ascodd2001@delhi.as;www.ascodd.delhi.as

2. Thirty Second Annual Conference of the Indian Society of Nephrology, Lucknow, Uttar Pradesh, India 28-30 September 2001
Information: Dr. R K Sharma Organising Secretary, Department of Nephrology, SGPGIMS, Lucknow 226014; rksharma@sgpgi.ac.in

3. Symposium on Recent Advances in the Therapy of Solid Tumors under the auspices of the Indian Society of Medical and Pediatric Oncology, 5 to 7 October at Pune. Contact Dr. S.M. Karandikar, Chairman of the Scientific Committee, Shweta Corner, 7 Lane, Prabhat Road, Pune 411 004. Tel: 020-567 2999, 5678199.
E-mail: skaran@pn2.vsnl.net.in

4. 7th Annual Conference of the Indian Society for enteral and Enteral Nutrition 13 and 14 October at Mount Abu, near Ahmedabad. For more details contact the Organising Secretary, Dr. S.S. Alurkar, 301, Arth Complex, Behind Shree Rama Motors, Mithakhali Six Roads, Ahmedabad 380 009. Tel (C) 079-6426777, (R) 079-6600036, email: alurkar@indiatimes.com or Dr. Sarath Gopalan, Secretary, ISPEN, cnss@hotmail.com.

5. XIV Asia Pacific Federation Congress of the International College of Surgeons jointly with 47th Annual Conference of the Indian Section, 8 to 11 November at Hyderabad. Contact Dr. P. N. Joshi, Hon. Secretary, ICS, Indian Section, 16, K. Khadye Marg Mumbai 400 034. Tel.: 4934358 Fax: 494 1052. Email: icsis@vsnl.net or the Chairman's Office, Durgabai Deshmukh Hospital, Vidyanagar, Hyderabad 500 044. Tel.: (O) 040-7617801, (R) 3310569; Fax: (O) 040-7667889, (R) 040-3324426.
Email: prcrao@hotmail.com.

6. Seventh Congress of the Asian Society of Transplantation, New Delhi, India 21-25 November 2001
Information: Dr. D. S. Rana Department of Nephrology, Sir Ganga Ram Hospital, R-770, New Rajinder Nagar, New Delhi 110060.
dsrana@bol.net.in; www.7thecast.com.

7. Twenty-third National Conference of Association of Radiation Oncologists of India, Chandigarh, India 22-25 November 2001
Information: Dr. F. D. Patel, Department of Radiotherapy, PGIMER, Chandigarh 160012; patelfd@glide.net.in.

8. XXXIV Annual Convention of the Indian Dietetic Association, 26 to 27 November at Coimbatore. Contact Dr. Parvathi Easwaran, Avinashalingam Deemed University, Coimbatore 641 043. Tel.: 0422-441241, Fax: 438786, Email: aduregr@md3.vsnl.net.in.

9. Tenth Surgical Gastroenterology Week, Lucknow, Uttar Pradesh, India 21-23 December 2001
Information: Dr. Ashok Kumar, Department of Surgical Gastroenterology, SGPGIMS. Raebareli Road, Lucknow 226014, Uttar Pradesh.

10. LXI ASICON 2001 — Association of Surgeons of India Patna, Bihar, India 26-30 December 2001.
Information: Dr. B. K. Sinha, 9A, Arya Kumar Road, Rajinder Nagar, Patna 800016, Bihar.